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GENERAL INFORMATION

THE OFFICIAL

ARMY INFORMATION DIGEST

U. S. ARMY MAGAZINE

NOVEMBER 1959



In this issue:

**COMBAT AIDS
TO THE
SOLDIER**

ARMY INFORMATION DIGEST



THE OFFICIAL MAGAZINE OF
THE DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern. The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

Manuscripts on subjects of general interest to Army personnel are invited. Direct communication is authorized to: The Editor, ARMY INFORMATION DIGEST, Cameron Station, Alexandria, Va.

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COVER: Two troopers of the 101st Airborne Division, a STRAC unit, examine the M-14 rifle—one of the new Army weapons designed to step up the effectiveness of the individual soldier. Other combat aids are described in a pictorial feature in this issue.

COMMAND LINE

Army Views On Vital Issues

ON THE ULTIMATE COMMAND

"In the final analysis, the highest command which any American officer can aspire to is to command the respect of the world for his efforts to advance the cause of righteous and enduring peace based upon the triumph of principle."

*Secretary of the Army Wilber M. Brucker
at Army War College graduation
Carlisle Barracks, Pennsylvania, 18 June 1957*

ON THE IMPORTANCE OF R&D

"Why is research and development important? Because it determines the future weapons and equipment that soldiers will use in combat. The Army bases its requirements for its program on the expected threat our nation will have to meet on the concepts of tactics and organizations for the battlefield of tomorrow, and on science and technology today and in the future. These factors are all considered in preparing the characteristics and requirements for new weapons and material."

*Lieutenant General Arthur G. Trudeau
Chief of Army Research and Development
before the South Carolina American Legion
Charleston, South Carolina, 20 June 1957*

ON REACTION TIME AS A MILITARY FACTOR

"Reaction-time and decision-time is being shorter and shorter. We must learn to think in increments of 1½ miles per minute instead of 2½ miles per hour. STRAC and STRAF are making good progress toward narrowing this dimension. . . . But shortening reaction-time should be a primary goal of every size unit right down through our Reserve Forces. The most modern weapons, organizations and tactics are useless if they do not have the quick-response capability. The Army Reserve, the Army National Guard and the Active Army of the 'One Army' Team must be poised—not posed!"

*General Bruce C. Clarke, Commanding General
U. S. Continental Army Command, at
U. S. Army Command and General Staff College
Fort Leavenworth, Kansas, 19 June 1957*

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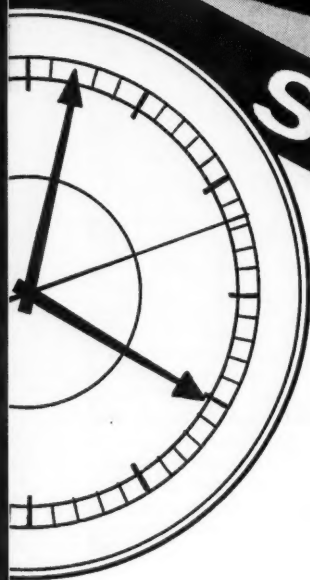
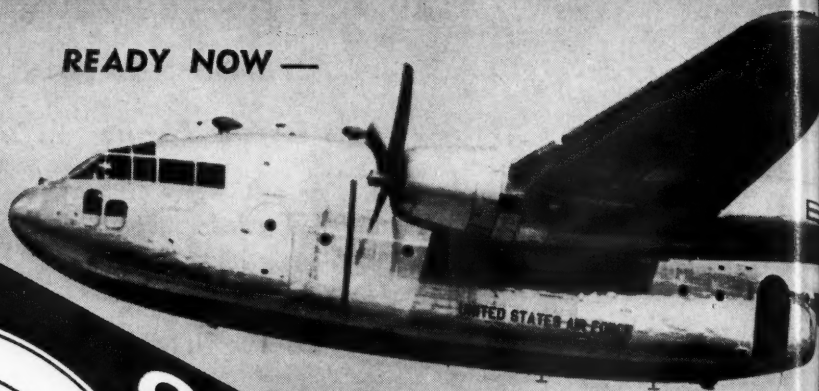
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READY NOW —



STRAC PLANS

Lieutenant General R. F. Sink

AT 1555 one May afternoon in 1958, the telephone rang in the office of the Commander of the 101st Airborne Division at Fort Campbell, Kentucky. Two hours and forty-five minutes later two companies of crack paratroopers were in the air on their way to Puerto Rico.

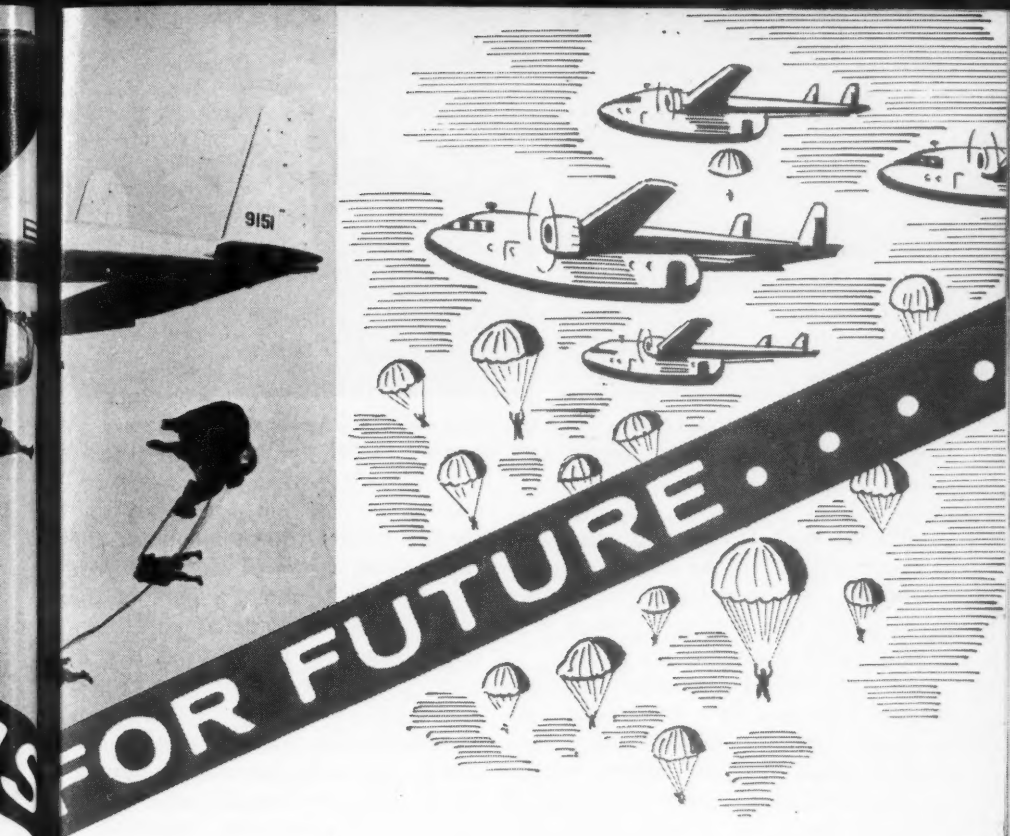
Five hours and twenty minutes after the alert was received, the airborne task force was unloading at Ramey Air Force Base in Puerto Rico, ready for further orders with a combat load of rations, ammunition and vehicles.

This move was a striking exam-

ple of the speed with which the airborne forces of the Strategic Army Corps (STRAC) can react.

Returning from Puerto Rico, the officers and men of the two companies jumped with full combat equipment at their home station, thus demonstrating that not only can they move fast but they are ready for battle after a long trip.

This force further demonstrated what has been called our one most important capability for limited war—the ability to move into action rapidly and decisively to put out a brush fire anywhere before it can develop into general war.



STRATEGIC mobility — the ability to make intercontinental moves by air, on short notice if necessary—is what makes the airborne and selected infantry organizations key units in STRAC. They are equipped and trained for *air movement*. Equipment for STRAC units is selected so that it can be readily transported by air and in many cases can be dropped at the scene of action.

Only if STRAC can be moved in time to the place where needed, can it best serve our Nation's interests. Movements by trained air crews, preferably trained with

STRAC units, is the fastest way of moving a ready force. In Exercise Banyan Tree early this year, for example, the assault echelon of the airborne battle group of the 82d Airborne Division was loaded at midnight at Fort Bragg and, after a non-stop flight of 1,800 miles, made a parachute assault landing to seize objectives at Rio Hato in Panama at 0730 the following morning. (See "STRAC Flexes Its Muscles," July 1959 DIGEST.)

Stepped-up Mobility

SINCE the first U. S. airborne units were organized and used in



"Emphasis today is on improvement of tactical mobility and maintaining or improving the Army's over-all capability to be moved to the area of operations by strategic air."

World War II, great progress has been made. In the early days, airborne units jumped from C-46 and C-47 aircraft or were landed near the scene of action in gliders. In World War II operations, mortars and bazookas were the heaviest infantry weapons of airborne troops. The jeep was the largest vehicle that could be airlifted and landed ready for action. Today all vehicles and equipment of our airborne divisions are airtransportable and most of them can be dropped by parachute.

AN airborne force is an integrated, battle-ready force of ground and air units organized, equipped and trained for airborne operations. Since there can be no air-

borne force without airplanes, the pilots and crews of the U. S. Air Force are as much a part of the joint airborne force as paratroopers. The increased capability of Army airborne units is due in part to development by the U. S. Air Force of the various types of aircraft for airborne assault operations, and for long-distance movement of heavy, bulky loads. The vital importance of these cargo aircraft justifies a review of current capabilities in this field.

Available Aircraft

THE U. S. Air Force provides the following types of aircraft to lift Army units:

C-119—a medium transport currently being phased out of active Air Force



LIEUTENANT GENERAL R. F. SINK

**Commanding General, XVIII Airborne Corps
Fort Campbell, Kentucky**

and turned over to U. S. Air Force Reserve.

C-123—a medium assault transport which provides a capability to air-land personnel and equipment on open fields and other unimproved landing areas; can be adapted for air delivery; not used for heavy drop of large items.

C-124—a heavy transport primarily used for strategic airlanded operations.

C-130A—a medium range transport with a greatly improved payload-range capability over the C-119; is a high speed, high altitude aircraft suitable for transport or air delivery of personnel and equipment.

C-130-B—model improvement of the C-130A with increased payload-range capability.

C-133A—a heavy logistic transport with increased payload-range capability over the C-124. This high speed, high altitude aircraft improves capabilities of airborne forces by making it possible to airlift armor and heavy engineer equipment.

REQUIREMENTS of the atomic battlefield of the future will make it imperative that airborne and air-transported forces get, safely and in time, the equipment they must have to fight, survive and win. While the U. S. Air Force has been working to develop improved aircraft, the Army in a parallel effort is developing equipment that can be transported by air and dropped when and where needed.

Maximum tactical mobility, overwhelming firepower and effective communications will be equally as important for airborne forces as for those which move by land or sea. The Army constantly seeks to develop equipment which is compact and light enough for rapid movement and safe delivery by air. Reduction in weight in current de-

signs for new equipment is improving the Army's capability to accomplish strategic and tactical moves by air, rapidly and effectively, as may be necessary.

These efforts are being supplemented by development of new kinds of equipment. On the battlefield of the future, it appears that both sides will have overwhelming firepower in the form of tactical nuclear weapons. The final decision will probably go to the force which not only avoids its opponent's fire, but utilizes its own effectively, in time, at the point of decision.

A modern combat force must be elusive. Its security and survival may depend to a great extent on a margin of tactical mobility superior to that of the opposing forces. Moreover, modern combat forces will have to be able to locate, observe and destroy an equally fluid enemy force. U. S. Army forces, therefore, will not only have to have tactical vehicles, both ground and air, which can operate under unusual conditions and demands, but which also have built-in equipment enabling troops to locate critical targets and send and receive information and orders required for timely, effective attacks.

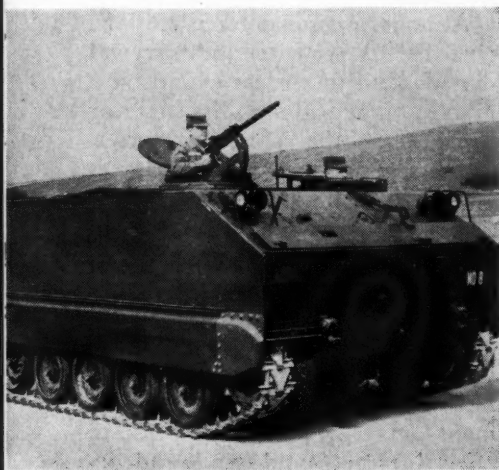
Tactical Mobility

EMPHASIS today is on improvement of tactical mobility and maintaining or improving the Army's over-all capability to be moved to the area of operations by strategic air.

Tactical mobility—the ability to move in the area of tactical operations—must include the capability to execute small-scale air-landed operations, to shift reserves or move



Platform vehicles, typified by Mechanical Mule being loaded with 4.2 mortar and base plate during STRAC exercise at Fort Bragg, promises improved tactical mobility.



Amphibious, air droppable M113 armored personnel carrier is lighter than M59. Below, air transportable, full-tracked tractor typifies new engineer equipment coming into use.



units or individuals by air, and to move critically needed supplies and equipment by air. Thus, Army aviation is an essential supplement to the ground transportation system operating within the combat zone.

Increasing capabilities of Army aircraft are bringing us to the threshold of significant breakthrough in tactical mobility. Even now, in STRAC units there is a real integration of Army aircraft into tactical organizations to give combat commanders mobility and flexibility scarcely dreamed of in earlier days. For joint airborne operations within 100 to 150 miles of friendly territory, Army aircraft could be expected to fly into the objective area in the early stages of the operation.

For deep airborne operations beyond their range capabilities, Army aircraft require some degree of disassembly for transport in Air Force troop carrier aircraft. This varies from a negligible amount in the case of smaller aircraft to major time-consuming work for larger types of cargo helicopters.

High on the list of required characteristics for future Army aircraft for airborne units is airtransportability. The current replacement for the light cargo helicopter of the airborne division represents a significant improvement in this respect. The same is true of models under development in the reconnaissance helicopter field.

Aircraft and Equipment

TACTICAL mobility provided by Army aviation today is achieved by adaptation of relatively crude air vehicles. Much research and development is under way to improve this situation.

The following brief review of equipment development serves to highlight significant trends in current progress toward improved ground combat capability for airborne troops.

H-21 and H-34, light cargo helicopters.

Backbone of present capability is the light cargo helicopter, with the H-21 and H-34 having relatively same characteristics, providing space for 18 troops or ability to carry 3,000 pounds of cargo for an action radius of 50 nautical miles at 90 knots.

YHC-1 (Chinook) medium cargo helicopter. Now under development, the new YHC-1 is to be powered by two gas turbine engines to carry 6,000 pound payload, capable of lifting Honest John rocket within the craft.

HU-1A utility helicopter, powered by gas turbine engine, is replacing the H-19. It is smaller than the H-19, is airtransportable in some existing Air Force cargo aircraft and has a payload of about 1,000 pounds.

H-37 medium cargo helicopter, Army's largest standard aircraft, has twin engines, lift capability of 6,000 pounds, can carry 23 men or internal load such as 105mm howitzer or 1/4-ton trailer.

H-13 and H-23 observation helicopters provide observation and reconnaissance facilities, increase commander's ability to move to decisive points.

L-19 fixed-wing aircraft provides aerial reconnaissance, target acquisition, fire adjustment capabilities. Carries pilot and observer at 85 knots with 4 1/2-hour fuel supply.

AO-1 (Mohawk) medium observation aircraft is under development; will cruise at 225 knots and carry photographic, surveillance and electronic target data under any weather conditions.

L-20 utility and U1-A light cargo fixed-wing aircraft are utilized for personnel and resupply missions, wire lay-



Contracts have been let for manufacture of new, improved version of 1/4-ton utility truck which has already passed airdrop tests "remarkably well."



Air transportable scraper, above, is towed by light tractor. "Scorpion," self-propelled anti-tank gun, is fast, air droppable weapon with high fire rate.





One of family of new improved trucks now under development, the $\frac{3}{4}$ -ton truck is light, fast 4x4 vehicle that possesses good weight-to-payload characteristics.

ing and evacuation of casualties. *YAC-1 (Caribou) transport aircraft* will soon be ready for troop test phase. With 3-ton payload capacity, it is a twin-engine short take-off and landing (STOL) aircraft that can operate fully loaded from an L-19 landing strip.

Tracked and Wheeled Vehicles

Tanks and Anti-tank Weapons—The Army tank development program is oriented for the future with the development of two armored fighting vehicles—a main battle tank and an armored reconnaissance/airborne assault vehicle. New family is still several years away, however.

M56 90mm self-propelled gun, presently in hands of troops, is airtransportable, can be parachuted, is extremely maneuverable vehicle, but lacks armor protection. Incapable of slug-ging match with enemy tank, crew must "shoot and scoot."

Personnel Carriers—New M113 armored personnel carrier recently standardized is improvement over M59; about half the weight, it is amphibious and can be air-dropped. Weight reduction achieved by aluminum armor and reduction in over-all dimensions.

T114, a smaller version of M113, is under development for command and reconnaissance vehicle and as recoilless rifle carrier, is amphibious, airtransportable, provides protection against small arms fire, shell fragments.

Tactical Wheeled Vehicles—New, improved versions of $\frac{1}{4}$ -, $\frac{3}{4}$ -, and $2\frac{1}{2}$ -ton trucks under development. New $\frac{1}{4}$ -ton truck has passed airdrop tests remarkably well. Airborne units also need vehicles with good weight-to-payload characteristics.

Platform Vehicles, typified by Mechanical Mule, show much promise, and larger versions may warrant consideration. Pilot model of $\frac{3}{4}$ -ton version of Mechanical Mule now being evaluated. Platform vehicles should be nestable to reduce bulk and fully utilize cargo aircraft capabilities.

Airtransportable Materiel

Engineer Equipment—Among airtransportable equipment developed for airborne engineer units—so essential in expanding and improving airfields—are an airborne rubber-tired tractor, a $7\frac{1}{2}$ -cubic yard scraper, a $7\frac{1}{2}$ -ton airborne crane shovel of $\frac{1}{2}$ -cubic yard capacity.

Ballastable airborne tractor (BAT) is four-wheel drive, weighs 17,000 pounds empty, can utilize dirt as ballast to become a 17-ton tractor for heavier work. With maximum highway speed of 25 mph, possesses mobility for cross-country movement. Will replace airborne tractor and scraper in airborne units; also is being considered as replacement for some equipment now used by ground units.

Airborne ballastable crawler (ABC) now under development, expected to incorporate all capabilities of ballastable airborne tractor, with increased traction, cross-country mobility, swimming capability. Effective for digging emplacements. Problems involved include track suspension, keeping weight within airborne limitations. If successful, ABC may replace all tractors (including BAT), scrapers, graders and dump trucks in combat area.

THIS review of Army equipment—all of which is either now in the hands of troops or in the final stages of development—indicates the progress that is being made in

increasing the battlefield mobility of our ground forces. Further progress can be expected in the future. The rocket jump belt for the individual soldier, the aerial platform, and zero-ground-pressure vehicle may be standard items in a few years.

Increased capabilities of U. S. Air Force aircraft and success of the Army's continuing effort to make its equipment airtransportable and, in many instances, air-droppable, has made a wide array of equipment available to our airborne forces. The new equipment, with corresponding new organizations and techniques, has vastly increased the effectiveness of our airborne forces since the day of the C-47 and the glider. As a result of this continuing effort, the airborne units of the XVIII Airborne Corps today comprise the spearhead of STRAC—Skilled, Tough, Ready Around the Clock—prepared to be moved to any part of the world where needed by our government or in support of friendly nations.

Exercise Dragon Head

To determine whether a three-division striking force can carry out limited nuclear war functions of a full field or theater army, Strategic Army Corps is staging Exercise Dragon Head—a three-state command post and field training exercise running from 14 October to 9 November. STRAC will operate over North and South Carolina and Virginia, demonstrating that its headquarters—Hq XVIII Airborne Corps at Fort Bragg—is capable of moving out and functioning on a strategic level as a field army headquarters while concurrently operating as a tactical,

fighting corps headquarters.

The exercise will test communications, mobility of command posts and nerve centers of major units, and other objectives. All together, 118 units representing 100,000 men in 16 states will be engaged. The U. S. Air Force will participate in a support role while the Navy will be represented in liaison capacity.

Dragon Head will mark the first time that STRAC forces have been operated as an integrated force deployed for situations typical of STRAC-type missions.

FOREWORD

MAN—The Ultimate Factor

LIEUTENANT GENERAL ARTHUR G. TRUDEAU

Chief of Research and Development
Department of the Army

IN THE nature of the Army's mission it is the soldier himself who, as a tactical entity of combat, must fight and control the battle. To wield the power of his hardware he must enter the battle personally; indeed, no means are likely ever to be developed which will permit him to control the battlefield without entering and occupying it. He is the ultimate factor in victory.

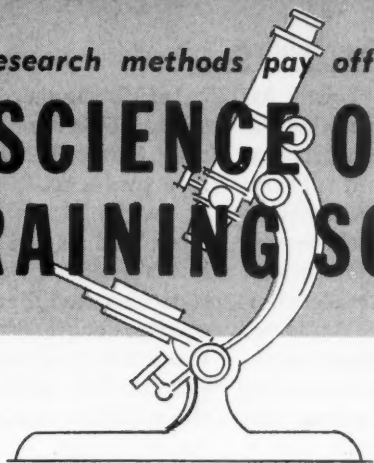
The Army must therefore continuously devote substantial scientific resources to research on human factors in warfare—developing improved methods of selecting men for combat; assuring that their equipments are compatible with their innate and trained aptitudes and battle skills; devising means of understanding and influencing enemy troops and supporting populations; and improving methods for training in the complex knowledges and skills of the soldier's profession.

THE Human Resources Research Office (HumRRO), charged with research directed toward the improvement of Army's training, motivation and leadership, has in the eight years of its existence made outstanding contributions to the Army. HumRRO research, coordinated with agencies concerned with human factors in the related fields mentioned above, is a substantial and critical portion of the Army's resource for better understanding and use of human capabilities in warfare.

The following article, by Dr. Meredith P. Crawford, Director of HumRRO, illustrates one more way in which the techniques of science are used to augment the professional capabilities of the soldier.

HumRRO research methods pay off in

THE SCIENCE OF TRAINING SOLDIERS



Dr. Meredith P. Crawford

"I HAVE been working in Army training all my career, but this is the first time I knew there was a scientific approach to it."

This remark by an Army colonel who had just been briefed on the work of a HumRRO Unit summarizes our major mission very well—the application of scientific research methods to the study of Army training.

Some of the HumRRO research products which have already been adopted by the Army and which have resulted in major gains in soldier proficiency and decreased training costs include:

TRAINFIRE—A new method of teaching combat rifle firing in basic training.

OFFTRAIN—Sound movies for teaching leadership techniques.

SHOCKACTION—A new program for training armor crewmen.

REPAIR—Improved maintenance training for radio repairmen.

RADAR—Training more proficient radar mechanics in shorter time.

DR. MEREDITH P. CRAWFORD is Director, Human Resources Research Office, George Washington University, Washington, D. C.

THE George Washington University Human Resources Research Office, best known as HumRRO, represents a unique combination of military and scientific skills. Since the Department of the Army awarded the initial contract to the University in 1951, there has been a steady growth in effectiveness of this cooperative relationship.

The contract, which sets forth the basic research and development mission of HumRRO, is monitored by the Human Factors Research Division in the Office of the Chief of Research and Development, Department of the Army. In essence, HumRRO's function is to help improve the soldier manning the hardware.

United States Continental Army Command (USCONARC) is the chief user of HumRRO research products. Military command of HumRRO field units is vested in USCONARC, particularly the Office of the Deputy Chief of Staff for Operations, Plans and Training. This insures that HumRRO personnel are kept aware of urgent operational requirements and prob-

The Science of Training Soldiers

lems, and helps pave the way for the utilization, on a day-to-day basis, of HumRRO's research results.

Technical advice on doctrine and technique is readily available through a constant and close relationship between HumRRO and the various Army Centers—Infantry, Armor, Air Defense, Aviation. This provides an invaluable working partnership for better assessing the validity of assumptions on which a particular research task is based.

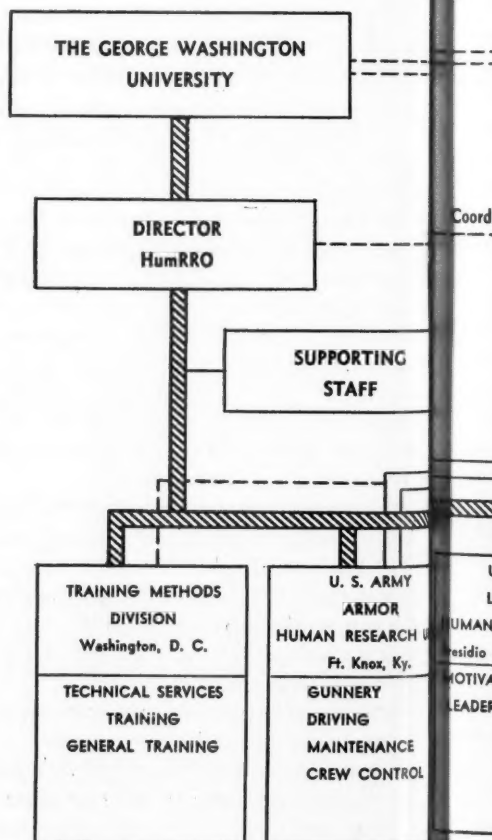
A good example of this working relationship is found in the current Task RIFLEMAN—a project to increase the combat efficiency of the light weapons infantryman. Nearly 60 military personnel have been assigned to the Infantry Human Research Unit at Fort Benning. They offer doctrine, guidance, cadre, and subjects for the research. The result—revolving around the introduction of a new family of lightweight weapons having a high cyclic rate of fire—will reflect the Infantry School contributors.

THE HumRRO research staff is made up primarily of experimental psychologists. Employing a quantitative approach, these versatile scientists seek to isolate important dimensions of a problem, determine cause and effect relationships, and bring out the human factor in complex military situations.

Among the staff, too, are a number of social scientists whose special background and training enable them to determine the nature of the soldier's attitudes, his perceptions, motivations, morale. HumRRO civilians now number over 260, with an additional 81 military personnel on the staff.

Incisive tools of statistical analysis and experimental design insure that HumRRO research on military problems is as solid and free of loopholes as is possible. The "mix" of varied technical know-how represented on the HumRRO staff also includes retired military officers, engineers and apparatus men, and specialists in reporting or graphic arts, who help insure that the research results are "packaged" for ready use.

Organization of the HumRRO

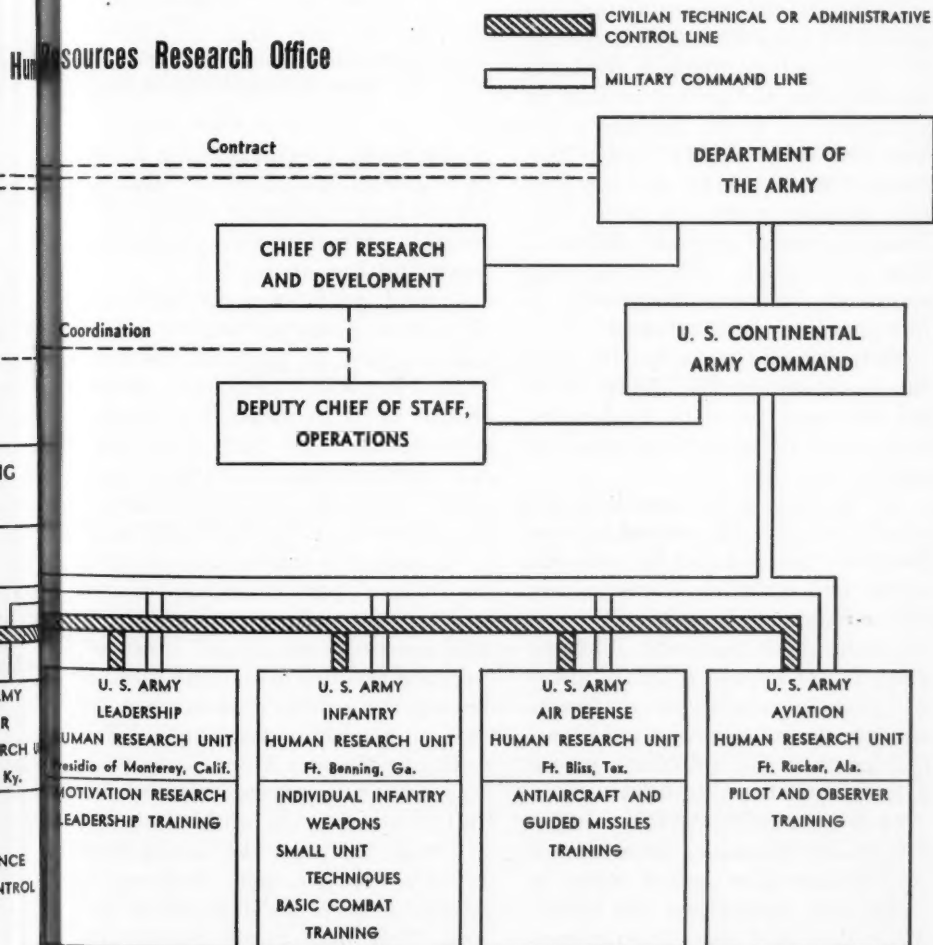


It is a fact of no small importance that day after day, HumRRO works in the field *with* the Army. Research is accomplished *where* the problems are, *with* the people directly concerned. The Army's school and field training operations both offer laboratories where thorough scientific investigations are conducted.

Active duty military officers who act as Chiefs of HumRRO's Hu-

man Research Units provide guidance, support and interpretation of research results that smooth the way for their implementation. They insure that HumRRO's research meets the military goals specified by Headquarters, USCONARC and Headquarters, Department of the Army; they provide the military support without which HumRRO's field research could never get off the ground; and, in the best sense

Human Resources Research Office



The Science of Training Soldiers

of the word, they "sell" HumRRO's research to insure its ultimate use by the appropriate "consumer."

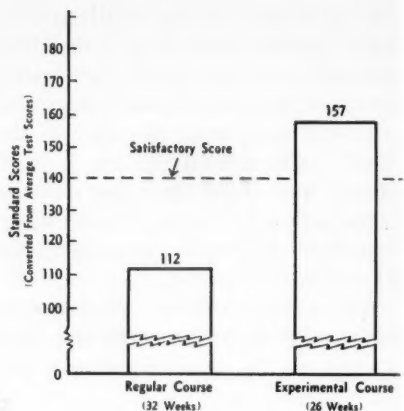
At both the officer and enlisted levels, military personnel act as social science research assistants, and still others contribute special military skills in many fields which complement those of the civilian staff. Some enlisted men are permanently assigned to HumRRO, while others are attached for special duties on specific tasks.

Through the years, HumRRO personnel have developed a systematic approach to research in Army training that has proved fruitful in a variety of areas. In effect, we now have a well defined method for Army curriculum development that permits a quicker and more straightforward analysis and solution of a whole host of training problems. In a typical research effort four steps are followed:

First, we find out what the man has to do on the job. Army training can miss the mark if planning lacks a careful analysis of what the soldier must do.

In the first step, therefore, our scientists determine everything pertinent to the man and his job—the duties and activities of the soldier, the demands made on him, the way he meets those demands. This analysis is not merely a library analysis from manuals or textbooks. Rather, the job activities are identified as they are practiced in the field—a real life situation.

In a current HumRRO research effort, for example, members of Task RAMP have visited Army installations throughout the world. Their data will provide an exhaustive analysis of the Army aircraft maintenance man's duties, the



"In some instances the new program improved proficiency despite reduction in training time."

problems he encounters, the kinds of malfunctions he must remedy, his strengths and weaknesses. The results—a clearer notion of what to teach and how to teach it.

Second, proficiency measures are devised to gauge accurately a soldier's ability to perform the job. Here HumRRO personnel utilize special skills in measuring human performance. To keep pace with the new technical subjects and skills required in today's Army, HumRRO scientists constantly need to develop new means of assessment of human performance. In the process they have devised and adapted measures for all kinds of military training situations such as testing the soldier's proficiency in repairing tanks, operating a Nike radar, receiving a Morse Code message, detecting targets from the air, and in firing a rifle while masked.

Third, based on the initial field activity analysis, new training is devised to meet the demands of the job. This may entail changes in teaching technique, changes in content, or wholesale revisions of an

entire training program, both as to method and content.

Fourth, an experiment is conducted comparing the new experimental training programs with conventional training, using the proficiency measures described earlier as a yardstick.

In this fashion, HumRRO researchers determine scientifically whether, and how much, we have succeeded in improving a specific element of Army training.

THESE four steps have been used to advantage in a variety of HumRRO research tasks. A good example from a well known HumRRO effort is Task TRAINFIRE.

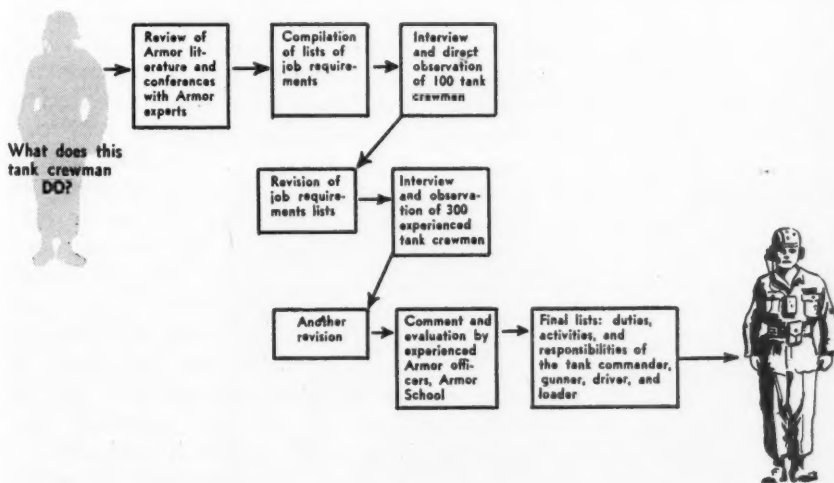
This research began when USCONARC, recognizing that the rifle had not always been effective-

ly used in combat, gave HumRRO the mission of developing a new type of rifle training—one that would teach marksmanship under field conditions during the first four weeks of basic training.

Since first-hand observation of the combat situation was impossible at the time, the HumRRO TRAINFIRE research team studied battle reports and interviewed combat veterans in order to determine as closely as possible exactly what the job of the combat rifleman involved. It was found, for example, that the rifleman seldom sees his target, that he must depend on fleeting indicators, and that he usually fires at ranges less than 300 yards.

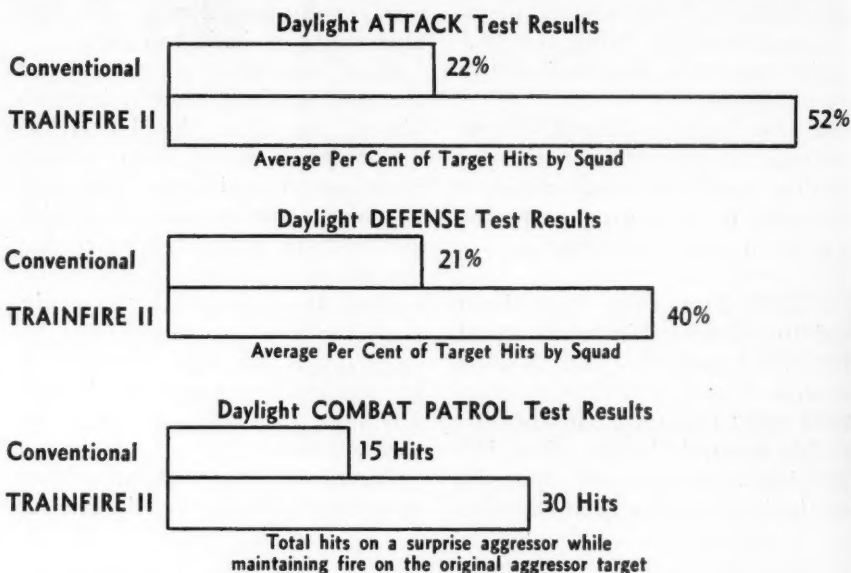
Next, two types of proficiency measures were developed—one for

ACCURATE JOB DESCRIPTION—A BASIC STEP



An important element in HumRRO's research is identification of all concrete duties required to get the job done. Steps shown here were followed in Task Shockaction.

COMBAT PROFICIENCY PROBLEMS FOR THE RIFLE SQUAD



Results of Trainfire II over conventional methods of teaching soldiers to fire rifle are graphically shown in various types of tests that were involved.

target detection and one for field firing.

Then, appropriate training procedures in both target detection and marksmanship were developed.

Finally, a field experiment was conducted. Equivalent groups of trainees were given the experimental and conventional training. In both detection and firing, the experimental groups proved to be superior. After Army troop tests, TRAINFIRE was adopted Army-wide.

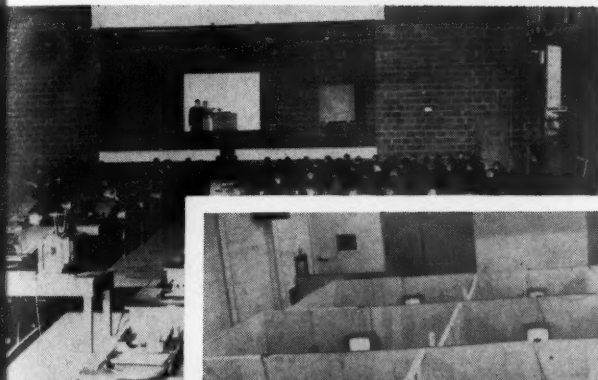
MAJOR contributions of HumRRO to date lie in the development of a number of experimental training programs which, like TRAINFIRE, are demonstrably superior to parallel, conventional ones.

Their superiority has been shown through the crucial fourth step experimental evaluations in which excellence of trainee performance has been the ultimate criterion. In some instances, the new program improved proficiency despite a reduction in training time. In others proficiency was not dramatically improved, but the new program accomplished its goal in considerably less time.

Whether measured by increased proficiency, savings in time, or overall costs, or by all three in combination, the fact remains that HumRRO research has led to marked improvements in major elements of training operations.

HumRRO's effort is by no means

Task Fighter studies the effects of fear stresses, the better to prepare an individual to face rigors of actual combat.

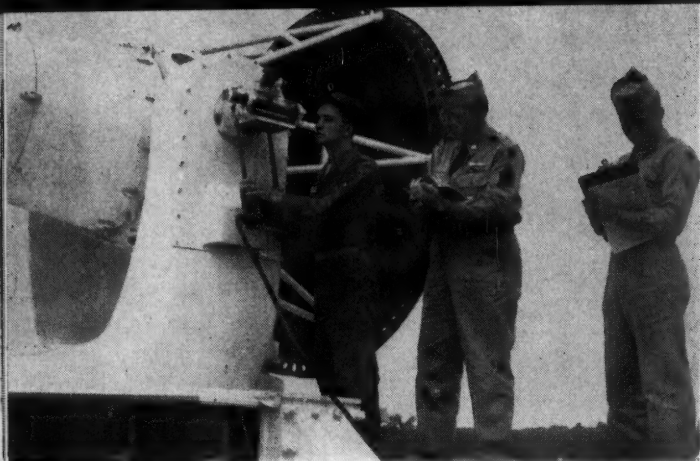


Experiment comparing effectiveness of TV instruction showed attainment of proficiency level comparable to standard training procedures.



Matching equipment to picture resulted in 25 percent savings in time over conventional methods of training.





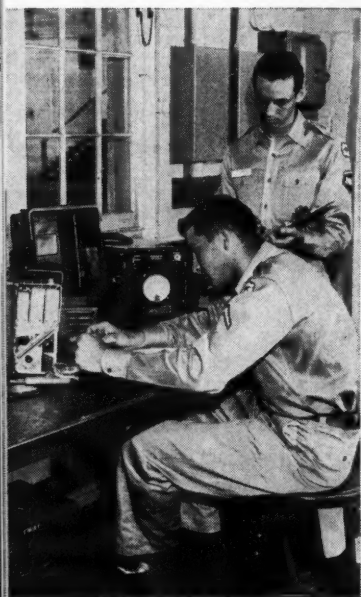
On-site testing of Nike operator proficiency resulted in a new instructional program which utilizes a Training Guide.

Soldiers using Trainfire methods study action of electrically controlled "Punchy Pete" that falls when hit.

Newly developed HumRRO course for field radio repairmen provides for follow-up test to determine retention ability.



Helicopter pilot's progress in training is evaluated by a member of HumRRO's Task Lift.



devoted only to the development of new training packages of immediate applicability. Considerable research is concentrated on portions of training programs that need special attention.

In other Tasks, the focus of concern is on training methods. HumRRO research has clearly shown, for example, the importance of teaching the soldier in a "functional context"—i.e., shearing away irrelevant theory and teaching practical skills in the context of the situation in which he will use them and the equipment he will face.

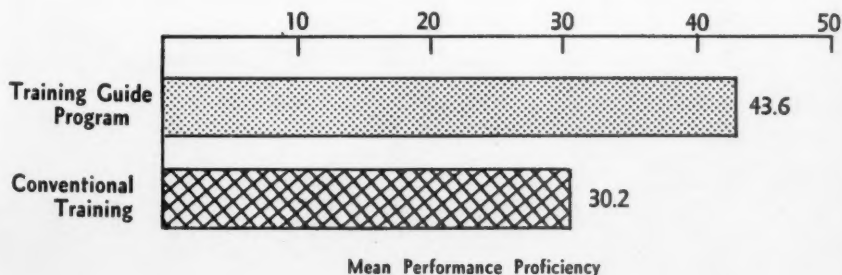
Systematic use also has been made of the important "knowledge of results" principle that is giving the soldier in training a knowledge of "how he is doing." This pays off in motivational dividends. Motivation has been increased, too, by showing the trainee the relation of each sub-skill he is learning to the total job, and by making the presentation of the material to be learned more interest-

ing. These and other approaches have been incorporated into a variety of training programs.

WHILE some HumRRO work seems at first glance to be removed from the area of training, in the long run it is not. This work is of an analytic sort, in which the final product is not necessarily a training product, but an answer to a problem that requires research analysis. The answer may have direct relevance to future training innovations by providing a better understanding of a human performance and more careful measurements of it. Or it may point the way to development of hardware or training aids, or lead to a variety of actions related, in some way, to soldier performance.

Good examples of such studies can be found in Tasks which define the limits of human performance under certain specified conditions. Task ARMORNITE, for example, is concerned with the limits of

The experimental training had the desired effect . . .



Soldiers who learned operator tasks using Training Guide made higher scores on performance proficiency tests than those taught through conventional procedures.

The Science of Training Soldiers

an Armor soldier's ability to see or hear at night. In PROTECT we have determined the boundaries of soldier proficiency while masked. In SPANOCON we are building test situations to identify the factors which determine the tank commander's span of control over subordinate elements in his command.

FINALLY, there is still another aspect of HumRRO's research effort—one that cuts across a variety of areas.

Army training, it is recognized, must be pointed toward the requirements of the future. The soldier must learn to handle new weapons; he must have an all-climate and all-terrain capability; and he must be relatively self-sufficient in terms of logistics, communication and leadership.

To keep abreast of these needs, HumRRO's program includes a

number of research Tasks which attempt to anticipate the Army's future training needs. One team, for example, is working on the development of procedures for anticipating training requirements for future weapons systems. Another is surveying human factors in military performance in extreme cold weather. In such Tasks, our concern is with the soldier of the future.

Whether the job is a conventional one like shooting a rifle, or one like tracking a guided missile, HumRRO's work is geared, simply enough, to improving the potential of the soldier to do his job. After he leaves the school or the training site, the soldier's contribution to the Army may vary over a wide range. The mission of HumRRO is to help maximize the contribution, to provide the Army with men of sure skill and high motivation.

In current Task NCO, training is designed to give today's "follower" an understanding of leadership that will prepare him to lead others tomorrow.



From laboratory and proving ground--

COMBAT AIDS TO THE SOLDIER



WHILE the U. S. Army keeps its eyes ever up and forward in developing the materiel, concepts and doctrine of future war—the nuclear weapons, the far-flying devastating missiles, Pentomic divisions, Missile Commands and the like—it also keeps its eyes on the ground.

For it is always realized that in the hands of the combat soldier, “that lonely man on the battlefield,” lies the ultimate decision, whether it be in general war or a localized action.

Recently the U. S. Continental Army Command revealed an entire arsenal of new materiel designed to provide greater fire power, independence of action, added mobility and improved means of communication for combat troops. In addition to the items designed primarily to allow the foot soldier to move, shoot and communicate under continually changing conditions of warfare, some are designed to offer greater safety and protection to the individual.

Also included in this pictorial presentation are combat aids recently demonstrated by other Army agencies.

COMMUNICATIONS--

With units widely separated, communications will assume continually greater importance to facilitate the commander's control on the battlefield of the future. Radios, switchboards, radio relays all have been or are being improved, while more efficient reconnaissance methods, weather forecasting, records keeping are becoming more necessary, more important.



PORTABLE RADAR. The "Silent Sentry" (AN/PPS-4, Radar Set) provides infantry units with capability of detecting enemy at night. Set has been service tested, and authorized for issue to infantry units.



NEW BINOCULAR. A binocular that may be used by personnel or in conjunction with filters on vehicle headlights or other infrared sources is another device for night target detection.

ELECTRONIC WEATHER COMPUTER arranged as a battlefield console figures automatically high altitude weather reports from information radioed by balloon-borne weather station. Dish-shaped antenna tracks balloon while computers record pressure, humidity, temperature and windage.



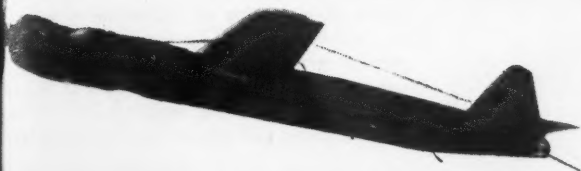
SUPER-SPEED TELETYPEWRITER — fastest machine of its kind—stamps out messages at 750 words a minute, ten times faster than standard equipment. Here the new device is mounted on a radio-equipped jeep as part of a unified mobile communications center.



DRONE CAMERA. Designed to take accurate, low-level pictures of enemy movements and positions at night, the new rugged 15-pound KA-28 camera slips easily into drone aircraft. The drone fires a series of brilliant photoflash cartridges to expose film in the camera, then returns and is dropped by parachute.



RECONNAISSANCE DRONE. The RP-71 drone, carrying a small lightweight reconnaissance camera, will enable tactical commanders to observe enemy positions and movements at a distance. The drone is controlled by radio and tracked by radar.



AIRBORNE COMMUNICATIONS CENTER. Designed to give combat commanders better control over widely dispersed troops, the new airborne communications center is self contained in a shelter housing a complete teletypewriter room with facilities to service an area hundreds of miles wide. Other shelters carry radio, telephone, telegraph.

HELMET RADIO. New helmet radio is designed to use sun's rays to obtain electrical power to operate both transmitter and receiver up to a year. Silicon wafers power radio during daylight, charge four tiny nickel-sodium storage batteries for use at night.



PERSONAL EQUIPMENT--

Continuing the U. S. Army's efforts to supply the best possible equipment for its soldiers, new items recently announced are designed for greater safety of the individual in his daily tasks as well as on a future battlefield. They range from devices for detecting air contaminants to armored vests.



LOPAIR DETECTOR. Although not truly an item of personal equipment, this infrared device for detecting air contaminants as far as a quarter of a mile away, is designed to provide greater safety for the individual. Known as LOPAIR (Long-Path Infra-Red), detector head provides infrared light while a self-aligning unit returns beam to detector.

ULTRA FAST-OPENING PARACHUTE is an experimental prototype item intended for emergency use at altitudes too low for successful deployment of current standard chutes, and at air speeds from zero or stalling to maximum speed of the aircraft. A two-stage pyrotechnic system operates it. Tests have been successful as low as 13 feet.



ONE-SHOT FLAME THROWER. A one-shot flame thrower weighing only 27 pounds when fully loaded with two gallons of fuel, this new item provides the combat soldier with a weapon he discards after firing. It is picked up by follow-up service units, cleaned, recharged and then used again.



PORTABLE FLAME THROWER. New flame thrower, designed to replace standard M2A1 model, weighs only 48 pounds fully loaded with 4½ gallons of fuel, compared to 72 pounds for the standard item.

FUEL HANDLER'S ENSEMBLE provides freedom of action, permits maximum dexterity with specially designed gloves. It includes a breathing apparatus with a 30-minute supply of uncontaminated air.

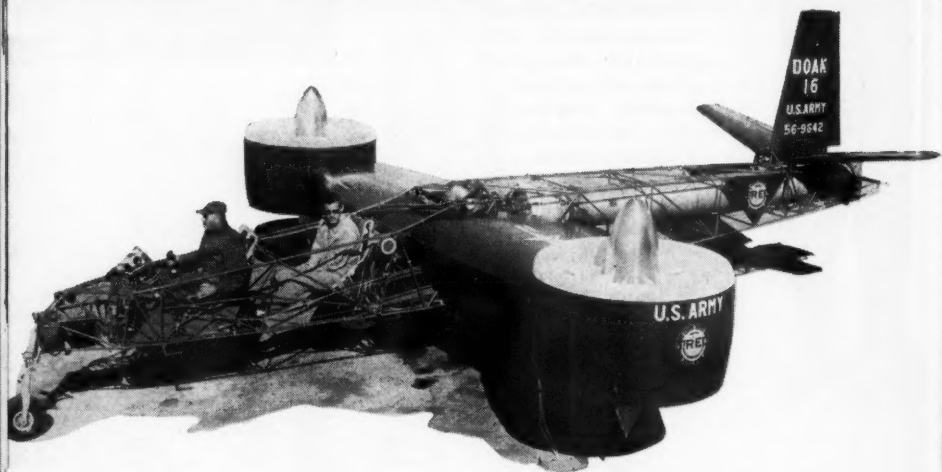
BODY ARMOR VEST designed to replace standard M1952A, affords protection from small, low velocity shell fragments. A ¾ collar gives added protection to neck and throat area.

SELF-INFLATING LIFE PRESERVER. Utilizing "trapped air" principle, new life preserver (bottom right) weighs less than 3 pounds, requires no mechanical or chemical means of inflation. Hydrostatic pressure automatically forces trapped air to the upper torso if wearer falls into water.



MOVEMENT--

is becoming of ever greater importance to the foot soldier as concepts of future warfare take shape. The battle of tomorrow now is pictured as being one of rapid movement by units that will hit swiftly, disperse quickly to avoid counterblows, then gather again rapidly to concentrate forces. Providing the means for such tactics, and evolving tactics to fit the concept, occupies much of the energies of Army planners.

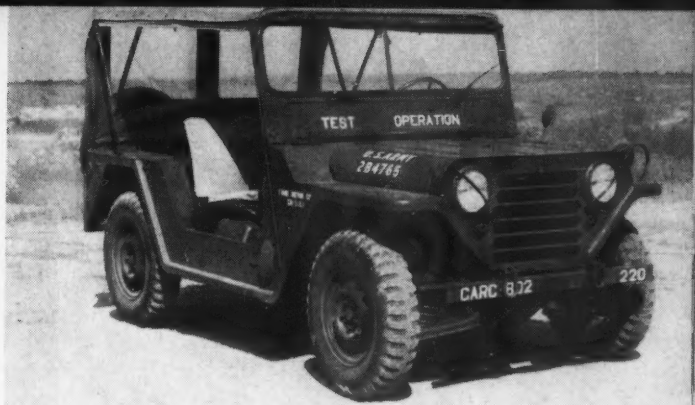


VTOL AIRCRAFT. Constant research is being devoted to VTOL (Vertical Take-Off and Landing) aircraft, as in this flying research vehicle recently unveiled which combines features of the helicopter and conventional plane. Ducted propellers at wing tips are set vertically for take off and then are rotated for forward flight,



PLASTIC ASSAULT BOAT carrying up to 15 equipped men, has been designed primarily for hand paddling. It also can be propelled by outboard motor.

UTILITY TRUCK quarter-ton pilot model has four cylinder engine developing 71 net horsepower, can carry cross-country payload of 880 pounds or highway load of 1,200 pounds at maximum speed of 66 mph, has cruising range of 300 miles and fording depth (without special equipment) of 34 inches.



PERSONNEL - CARGO CARRIER $\frac{3}{4}$ -ton truck is designed as a general personnel-cargo type carrier for cross country terrain in all weather conditions. It can be converted into ambulance or light wrecker. Powered by a four-cylinder engine, it has a 1,500 pound payload, sustained speed of 50 mph, cruising range of 300 miles.



H-37A HELICOPTER, the standard medium cargo helicopter now in use, can carry 23 combat equipped troops, or up to three tons of cargo, or combinations of these.

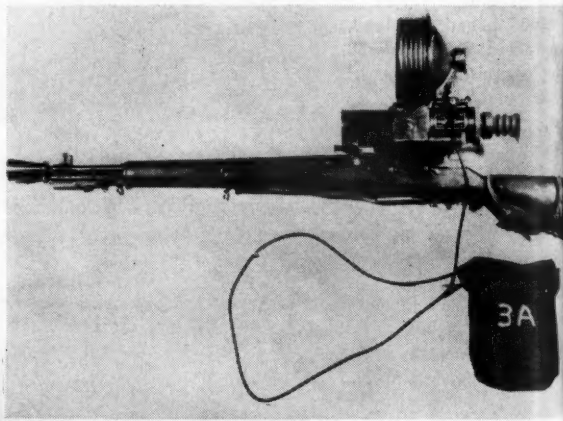


FIREPOWER--

The ability to lay down swift, accurate fire will be more important on the nuclear battlefield than ever before. As a result of years of research, new hand weapons and others designed to provide heavier blows against both personnel and tanks have been developed and now are under production. Along with the new weapons goes improved training techniques, such as the Trainfire method of rifle instruction, and sighting equipment.



M14 RIFLE will replace the M1 (Garand) rifle, carbine, the Browning Automatic Rifle, and the Cal. 45 M3A1 sub-machine gun. Firing the new NATO 7.62mm cartridge from a 20-round magazine, it is superior to the Garand in lightness, firepower and reliability. It can be fired semi-automatically or automatically.



INFRARED WEAPONS SIGHT KIT is now being tested to replace standard Sniperscope. Providing a means of engaging a target at night with no visible light source, it may be adaptable to automatic rifles, machine guns, rocket launchers or recoilless rifles. It weighs 10 pounds compared to 27 for the standard set, has more than double the range of Sniperscope.



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106MM RECOILLESS RIFLE providing anti-tank protection for the Infantry can be mounted on a modified $\frac{1}{4}$ -ton truck, personnel carrier or the Mechanical Mule. It is equipped with caliber .50 semiautomatic rifle for spotting, has effective maximum range of 1,200 yards.



81MM MORTAR. Developed to replace the present standard M29 mortar, this experimental weapon weighs 75 pounds compared to 93 for the standard. The mortar now is undergoing engineering tests.

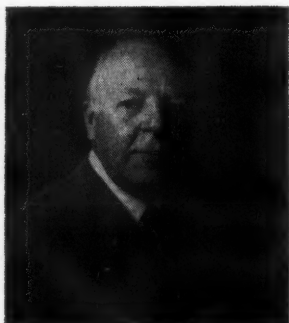
M60 MACHINE GUN. Designed to replace the three .30 caliber machine guns now in use, the M60 fires the 7.62 cartridge from a disintegrating metal link belt at cyclic rate of 550 to 600 rounds per minute. It is air-cooled, has quick barrel-change feature, requires no headspace adjustment, is lighter and more reliable than those it will replace.



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Increased interest rates make Series E

SAVINGS BONDS BEST BUY



A Statement by

THE HONORABLE WILBER M. BRUCKER

Secretary of the Army

THE magic vision of America as the land of freedom, which has inspired countless millions, has remained a reality through the years because it has been sustained by the lives, fortunes, and industry of the American people. Today, as in the past, Americans have an opportunity to share in supporting their Nation in every possible way. Many are already making a major contribution by serving in the Armed Forces. But whether in or out of uniform, every American ought to take maximum advantage of the golden opportunity to share in America through regular investment in United States Savings Bonds.

The President, under new legislation passed by Congress, has authorized an increase in interest rates on Series E United States Savings Bonds from $3\frac{1}{4}$ percent to $3\frac{3}{4}$ percent. This increase makes these great investments in the future of our country more attractive than ever before.

In urging the widest possible

public purchase of savings bonds, President Eisenhower has emphasized that each purchaser is providing not only for his Nation's defense but also his own personal security.

How is our Nation helped by sale of savings bonds? Today, we are opposed by the heavily armed, resourceful, and implacable Communist conspiracy, which has repeatedly stated that its basic aim is to spread Communism throughout the world, destroying everything which stands in its way, including—and most particularly—the United States.

To defend ourselves against this threat, our Nation must have money to purchase everything necessary to equip and maintain fighting forces adequate to defend America against Communist aggression. Purchase of savings bonds furnishes an important part of the money America needs.

The purchase of Savings Bonds is good for each of us individually because it increases our own finan-

cial security. Regular investment in savings bonds is a splendid way to develop a habit of thrift which will be of immense advantage throughout life. Savings will help provide for many future needs—education, for example, or the home we have dreamed about. Savings bonds are bulwarks against emergencies which might be disastrous to our future happiness.

Because both the *principal* and the *interest* on savings bonds are *guaranteed* by the United States Government, we can be sure that all of our money will be available when we need it. By participation in a savings bond deduction program, we can assure that our savings will be automatic and regular,

thus eliminating the uncertainty as well as the inconvenience of special trips or waiting in line to make savings deposits.

There are no fees for purchase or redemption of savings bonds. There are no fees for replacement of lost, stolen or destroyed bonds. Thus, savings bonds provide a combination of investment advantages found in no other security or savings program.

One of life's greatest rewards is the privilege of giving security to those we love. Regular purchase of Saving Bonds enables us not only to gain this satisfaction but also the additional one of sharing in the future of America, and helping to strengthen her power for peace.

—Keeping Current With the—

CONTEMPORARY MILITARY READING PROGRAM

A synopsis of selected books included in the Army Contemporary Military Reading List of professional interest to Army members.

COMBAT ACTION IN KOREA by *Russell A. Gugeler, Association of U.S. Army, 1954, 260 pp. \$5.*

Discussing strategy, cost in men and equipment, errors made and possible remedies, the author presents a readable report of what happened in various Korean battles and how the U. S. Army performed there.

MILITARY POLICY AND NATIONAL SECURITY, edited by *William W. Kaufman, Princeton University, 1956, 274 pp. \$5.*

Eight essays by Professor William W. Kaufmann, Gordon A. Craig, Roger Hilsman, Klaus Knorr discuss various strategic doctrines, America's coalitions and alliances. These essays by authors connected with Center of International Studies are based on the Center's program of research on problems of defense and national security.

NUCLEAR WEAPONS AND FOREIGN POLICY by *Henry A. Kissinger, Harper, 1957, 455 pp. \$5.*

This discussion of development of nuclear weapons and their effect on military strategy and foreign policy reflects Dr. Kissinger's work over a period of 18 months with a group of experts organized by Council on Foreign Relations.

*The Director of Selective Service states some facts
which we as a nation have yet to learn regarding*

SELECTIVE SERVICE OBLIGATIONS

LIEUTENANT GENERAL LEWIS B. HERSHEY, USA-Ret.

AMERICA'S capacity to survive under the threat of another war resides in its manpower. Only the most careful planning and the most efficient utilization of this fundamental resource will insure our safety now and in the future.

Through hard experience, marked by near brushes with disaster, the American people have finally almost learned the plain lesson of history—that large defense forces can only be built and maintained when the Nation is prepared to enforce the fundamental obligation of everyone to contribute to its defense.

I say we have "almost learned" the plain lesson of history. For even today, when this Nation faces the gravest threat to its existence that it has ever faced, there is no shortage of proposals which lead Americans into believing that they can somehow get somebody else to insure their survival.

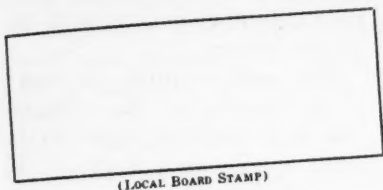
The myth that the Nation will voluntarily spring to arms overnight in time of danger persists, if slightly weaker than in the past,

and in varying forms. Some see as a cure-all the outright purchase of safety by hiring all the defense forces we need. The visionary may conceive of the Nation as needing only a few technicians who will push the proper buttons at the proper time. Still another variation takes the form of a proposal that at least those defense tasks which do not require the operation of a weapon can be performed by 8-hour-day, 40-hour-week employees.

WE as a nation have not fully learned the lessons of history—that is, not all of us have, and surely none of us has learned them completely. But perhaps we have learned some important things. We have learned that we must keep—at least right now—a way to maintain the minimum forces we need.

On the other hand, we have not learned, or we refuse to recognize, that in the future we will have to depend more and more on the present system, or something like it. Also, we have not learned or recognized completely all the ways in

SELECTIVE SERVICE SYSTEM ORDER TO REPORT FOR INDUCTION



(LOCAL BOARD STAMP)



(Date of)

The President of the United States,

To (First name)

Mailing address

(City, town, or v

GREETING:

You are here

at (Place

at (Hour of report

for forwarding

which the present system of enforcing military service contributes to the strength of the Nation. When we do learn, we will more easily accept the measures and methods necessary to insure the Nation's security.

A Motivation to Serve

TODAY as in the past, America produces highly motivated, dedicated citizens. Service to the Nation in the Armed Forces is an

ideal that attracts many of these citizens. No one has to point out duty to these men; there is no need to prod them into accepting that duty. We are indeed a land rich in this kind of citizenship.

Certainly the Armed Forces attract their share of this kind of citizen, to whom many opportunities to serve are open. But not enough of them ordinarily choose the Armed Forces as a career to give us the numbers we need.

Selective Service Obligations

It has been my experience that surprisingly few people recognize how many men enter the Armed Forces largely because if they do not, they will be drafted. Many who should be most alert to this relationship sometimes seem unenthusiastic about acknowledging it. Perhaps that isn't surprising. A good number of those people who are most aware of it—the men who "beat the draft" by enlisting, or by applying for a commission — find other motives they deem more attractive for explaining, when they are asked, why they enter service.

Americans are not slackers. But it is too much to expect that every man can be so detached as to recognize on his own exactly where, at any time, he can best serve his society. It is not surprising that, in a land of multitudinous opportunities, the number who choose military careers is considerably smaller than the state of the world requires we maintain.

It is right—and it is so, I believe—that the great majority of Americans who do not choose military careers accept the need to serve in the Armed Forces when the Nation requires it. And it is in total harmony with our traditions and concepts that a fair, just, democratic

system be used to identify the men who will serve and to designate the time for service in the national interest.

The vast majority of men who serve because of the existence of the draft perform their service in good spirit—as a duty of citizenship they would not freely choose at the time it is exacted, but which they perform in reliance on the Nation's determination that their service is needed now.

There has been some criticism of the Nation's mobilization policies on the grounds that the added motivation to serve supplied by the draft is a corrosive force damaging to the military service.

On the contrary, I believe that the Nation is far better served by the citizen who performs what he recognizes to be a duty, even reluctantly, than by the man who does a job because, for example, he can't afford to turn down the pay.

EVEN NOW, we haven't learned fully how well our present system does the primary job it was meant to do. Nor have we learned completely that it is a system ideally suited to a patriotic, democratic citizenry.

Too few have learned how the



LT. GEN. LEWIS B. HERSHEY, USA-Ret.

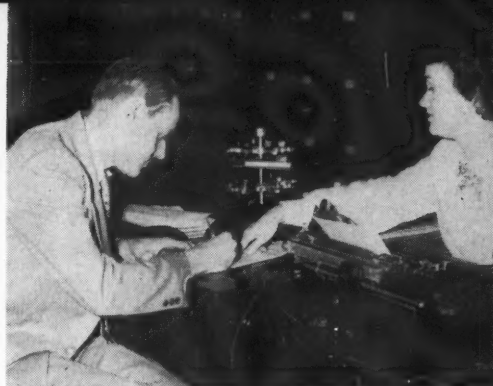
**Director,
Selective Service System**

existence of the draft—which reflects a determination of our military manpower needs—has helped to build and maintain our reserve forces. It induces men to choose to perform their service in the reserve. It induces them to remain active, contributing to progress in unit training.

Too few have learned how the operation of the draft strengthens the Nation through deferments for essential civilian activity while it strengthens the Nation by helping to maintain military forces.

Perhaps even fewer recognize the importance of having in existence an organization capable in the event of nuclear war of contributing immensely to the identification, location and utilization of the manpower which will be needed without delay when survival is the first and primary necessity.

These all are capacities and functions of the Selective Service System. It was essentially this system which raised the forces necessary for victory in World Wars I and II, in Korea, and throughout the continuing years of international tension. And it will be something very much like our present system that



On reaching age 18, young men register with one of 4,000 boards which maintain check on how each fulfills his military obligations.

will facilitate and guide the successful utilization of the Nation's manpower in future crises.

THE 86th Congress has extended the authority to induct men into the Armed Forces until 1 July 1963. The extension was based primarily on a forthright recognition that without the prod of compulsion in the background, enlistments would dwindle and Armed Forces strength fall far below the minimum.

By itself, the continuing need for minimum forces of at least the present size will require that the draft be kept for the foreseeable future. The largest armed forces which can be maintained without

Board members decide in each case whether man is available for service, or exempt, or should be deferred for reason.



Selective Service Obligations

compulsion, even under the most favorable conditions, is not more than 1,500,000. And as standards of acceptability are raised, the size of the force that can be obtained without compulsion shrinks.

Standby Reserve Role

ALTHOUGH its primary mission is to help maintain Armed Service strength, active and reserve, the Selective Service System performs other functions of salient importance. Under the Armed Forces Reserve Act of 1952, the Director of Selective Service was given the responsibility for determining which members of the Standby Reserve can be recalled to duty in the event of war or national emergency declared by Congress. Well over 1,500,000 Standby Reservists have been reported to the local boards under this program. In order to maintain current reports in the hands of the Services on availability of these men, local boards must periodically review each individual case.

In determining the availability of the Standby Reservist, the local board decides whether he should be left in his civilian status because of work contributing to the national strength, or because recall would involve extreme hardship to dependents.

This evaluation of where a Standby Reservist may best serve is a part of the increasingly important channeling function performed by Selective Service. Every classification action taken by a local board on any one of the more than 21,000,000 registrants involves a decision of how an individual may best serve the Nation.

Our concept of service is chang-

ing and must continue to change. Warfare, cold or hot, grows more complex as society grows more complex and as technology advances. Today, certain activities are vital to the cold war which were unprecedented in World War II or Korea. Skills and abilities we discount today in measuring our strength may be critical tomorrow.

The men behind the man behind the gun constantly increase in number. The men who serve without a gun or a uniform also increase in number. These are the considerations that guide local boards in their decisions, as they guided Congress in providing authority for deferments and exemptions.

THE Universal Military Training and Service Act specifically requires that an effective national economy be maintained in the process of selecting men for military service. Congress also declares in the Act that national security requires "the fullest possible utilization of the Nation's technological, scientific, and other critical manpower resources."

Young men are influenced to enter and remain in specialized fields of study, in critical occupations, in many activities vital to the national health, safety and interest by deferments and the prospect of deferment from military service. It is as essential to national defense that vital civilian activities be manned as it is that the military forces be maintained. It is essential that potentially important skills of our people be developed.

It is true that civilian work of importance performed by a man while deferred from military service does not relieve him of the obli-

gation to serve in uniform. On the contrary, the deferment advances the age at which the military obligation ends from 26 to 35. But only when the military necessity is clearly primary will such an older skilled man serve in the Armed Forces.

We are now recognizing service in defense and out of uniform. How far and in what directions this recognition may extend is impossible to predict. But such civilian service is vital to the Nation. The possibility of induction does much toward insuring that such service will be performed.

It is difficult to estimate the importance of the draft law in thus influencing the proper utilization of manpower. The Selective Service System is the only agency this Nation now has to influence men to contribute to defense—either by military service or by activity vital to the Nation, for which deferments may be granted.

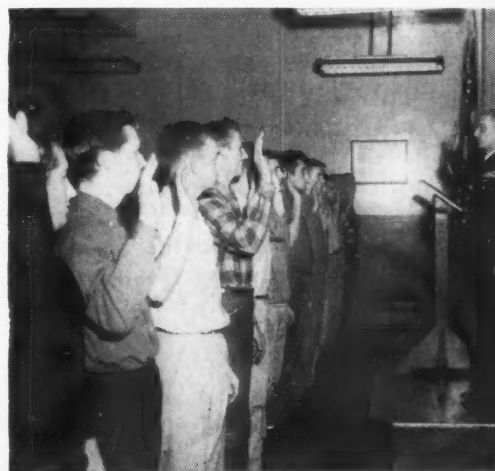
OTHER functions of Selective Service organization are of value in the event of ultimate emergency. Every young man registers with a local board. Thereafter, records are kept on him throughout the period of his military obligation and beyond. The 4,000 local boards thus maintain a constant inventory of the Nation's manpower resource.

Such an inventory is indispensable for any rapid expansion of the Armed Forces, in time of emergency or widespread catastrophe. This inventory is not centralized; it is maintained by the local board in each community and includes the men that area must rely on for the many survival tasks that would follow nuclear attack.

Each local board is expected to



Physical and mental examinations determine acceptability of selectees, above, and those meeting the strict standards are sworn in.



Hundreds of local board clerks have received certificates of appreciation from the Armed Force for aid given to the recruiting services.



Selective Service Obligations

function by itself if isolated. It will be able to furnish manpower and manpower information to any authorized user, civilian or military, in the event of disaster. And every element of the System, including local boards, engages in drills and prepares plans to insure its survival and ability to operate.

As has been seen, maintenance of the minimum active and reserve forces necessary for defense is impossible without a Selective Service System. And even if the needs of the Armed Forces are met entirely by enlistments, it will still be necessary to retain the prospect of induction as a stimulus to enlistments.

If the size of the Armed Forces is reduced and the standards of skills increased, some method of inducing skilled men to serve will be necessary. There are fewer of these men and the competition for their services is keener.

In the remote event that some hitherto undiscovered means of maintaining a truly volunteer force

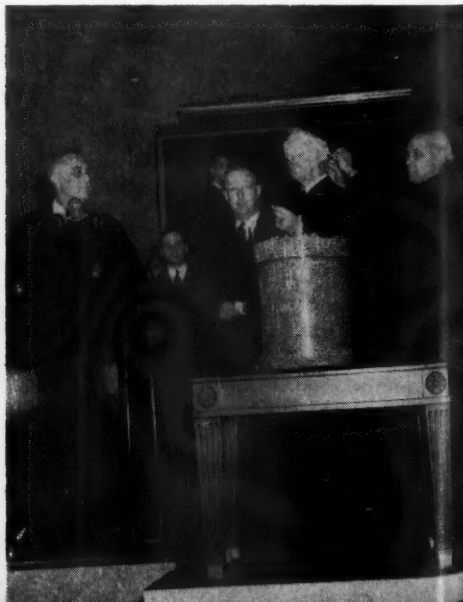
is devised, there is still the unknown future to consider. Could the Nation afford to dismantle an organization with proven capabilities, which might mean our survival, but which could not be reestablished after a disaster? Can any community afford to disband the fire department and sell the fire engine after every blaze?

A Tested System

UNTIL the world returns to a state promising some degree of peace—a possibility which, regretfully, I cannot foresee—it will be foolhardy even to consider abandoning the tested Selective Service method of keeping our defense adequate and of mobilizing our full strength if needed. We must always be prepared to require everyone to do his utmost for his own and the Nation's survival. And we must be certain that our possible enemies know that we are so prepared.

The unique organization of the Selective Service System typifies the

In World War I, left, and in 1940, names were drawn by lot, in contrast with today, when order of selection for induction is determined by man's birth date.



preparedness this Nation must maintain. Through its local boards every community in America has an active role in defense. Not only does every community send its men to serve, but the community itself selects them.

More than 40,000 patriotic, dedicated citizens — members of local boards, appeal boards, advisors and aids—serve without pay to make America's mobilization system work. These unpaid civilian employees make up more than 85 percent of the total Selective Service force. Their work contributes significantly to the Nation's strength.

The System and its success are not accidental. The present local civilian "grass roots" method of mobilizing our manpower resources is a direct development from the failures and near disasters experienced under the federally con-

trolled, militarily-operated Civil War draft. It has been refined and perfected by experience in World War I, by long and detailed planning between the wars by the Joint Army and Navy Selective Service Committee, and by the strains and demands of World War II.

FROM Colonial days, when more than 600 separate enactments compelled military service, down to the present day, Americans have recognized the universal obligation of those who are able to contribute to the Nation's defense. Almost continuously since 1940, the Selective Service System has insured the manning of our defense establishment. So long as we need large Armed Forces, Selective Service also will be needed to maintain the strength and preparedness of our armed services, active and reserve.

A Lesson from History

"It was not the military power of the barbarian hordes hammering at the gates of Rome which brought down to dust that civilization which had stood for a thousand years. Rome was finished long before the enemy finally attacked. It was finished because the character of its people had deteriorated.

"Those who should have been caring most about preserving the integrity of their civilization were more concerned about the pursuit of pleasure. They committed themselves to complacency, laziness, and rich living. They forgot the ideals of courage, industry, and morality which had made Rome master of the known world. When there were rumors of trouble they assured themselves that it was no concern of theirs—the legions would take care of it—and turned once more to the banquet and the bath.

"Rome fell because the individual Roman citizen forgot his own unshirkable moral and physical responsibility for the defense of the state, not only on the battlefield but in every aspect of life.

"Let us take heed of history."

*Secretary of the Army Wilber M. Brucker,
before the Chamber of Commerce,
Kansas City, Missouri, 14 January 1959.*

**How the Army Scientific Advisory Panel
helps in**

WAGING THE WIZARD

Colonel Jackson E. Shirley

KING Arthur, according to ancient legend, maintained the wizard Merlin at his beck and call to advise and to cast his magic. Today the U. S. Army has available an advisory panel of the Nation's top-notch scientists, whose knowledge and accomplishments in the scientific realm would dazzle and amaze even the most accomplished of the old-time men of magic.

These scientists and technologists render advice on methods of achieving superiority of weapons and equipment in what Sir Winston Churchill once termed the "Wizard War"—the art of applying science and technology to combat problems. This form of warfare is not only important but actually vital in the age of satellites, space vehicles and atomic means of warfare at supersonic speeds.

Reflecting a determination to advance its scientific and technological superiority, the Army directly employs thousands of scientists, engineers and technicians, military and civilian; it also calls on other

thousands in research and development work in universities and industry. A Chief Scientist sits at the elbow of the Army Chief of Research and Development, alongside the Chiefs of the Technical Services, and often with commanders of field research and development installations.

Providing overall support to this effort, the Army in addition has available the services of the "Wizards," the Army Scientific Advisory Panel (ASAP), established by the Secretary of the Army in 1951. The Panel membership of about 60 has included many of the Nation's most distinguished scientists and industrialists, all serving on a voluntary basis. The majority serve without pay. All devote a great deal of their valuable time to the patriotic job of insuring that science and technology play well their vital role in keeping our Nation strong.

Specialized Fields

THE Panel is divided into eight subpanels, each concerned with one specialized area of the broad Army Research and Development effort—any one of which would overwhelm the imagination of an

COLONEL JACKSON E. SHIRLEY, General Staff, is Chief, Technical Liaison Office, Office of the Chief of Research and Development, Department of the Army.

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Waging the Wizard War

ancient Merlin. These areas are air mobility; chemical, biological and radiological warfare; communications and electronics; environmental research; firepower; ground mobility; human factors; management of research and development.

A Chairman heads the Panel while at the head of each of the subpanels is a chairman noted in his special field, assisted by others who have attained pre-eminence. Each subpanel also has a military consultant and staff assistant.

Panel Chairmen have included such famed personages as Dr. James R. Killian, Jr., President of Massachusetts Institute of Technology and until recently President Eisenhower's chief scientific adviser; Dr. Frederick L. Hovde, President of Purdue University; and Mr. Richard S. Morse, former President of the National Research Corporation and now Director of Army Research and Development. In his present assignment, with authority and responsibility in the R&D field equivalent to that of an Assistant Secretary of the Army, Mr. Morse continues to work closely with the Panel.

Present ASAP chairman is Dr. James McRae, a Vice President of American Telephone and Telegraph Company, and Coordinator of Defense Activities for the Bell Telephone System. He also has served as a Vice President of Western Electric Company and President of Sandia Corporation, Albuquerque, New Mexico. Vice chairman of ASAP is Dr. Richard C. Furnas, Chancellor of the University of Buffalo.

The various subpanels have, through the years, provided many specific recommendations which

have had significant bearing on planning, doctrine, research projects, and on actual production of materiel now in use or planned for production.

Some of the recent unclassified recommendations of the Subpanel on Air Mobility deal with future R&D requirements in slow speed flight, Vertical Takeoff and Landing (VTOL) and Short Takeoff and Landing (STOL) aircraft; navigation systems for short-range low altitude aircraft, and operational research studies covering local, limited war airlift.

The Subpanel on Chemical, Biological and Radiological Warfare recommendations have been concerned with methods of delivery and dissemination of chemical and biological warfare agents, and protective clothing. It also has recommended a greater R&D effort in the field of incapacitating agents, whose nature indicates the possibility of making warfare more humane.

Recommendations of the Subpanel on Communications and Electronics have ranged from combat surveillance equipment to use of automatic data processing systems to compute ammunition supply data or even the pay and allowances of troops.

IN the area of Environmental Research, the appropriate Subpanel has pointed out that the Army's emphasis on the possibility of limited warfare increases the significance of environmental factors; accordingly, it recommended that a continuing and systematic evaluation be made of world-wide advances in various scientific fields bearing on capabilities of operat-

ing in Arctic, desert and tropic environments.

The Subpanel on Firepower has urged early production and deployment of Nike-Zeus, development of a "family" of surface-to-surface missiles, and modernization of firepower, especially for limited war.

The Ground Mobility Subpanel has been concerned with the Army's Overland Train, with a new vapor-cycle engine, and an automatic welder for pipe lines.

Such problems as combat leadership, officer evaluation, manpower assessment and human factors engineering have been the concern of the Subpanel on Human Factors.

A recent report of the Subpanel on Management of Research and Development concluded that the Army Research Office must anticipate scientific development needs by continuously projecting desired capability requirements in terms of the "state of the art." This subpanel will assist the Army Research Office in efforts to accomplish this mission of "anticipation."

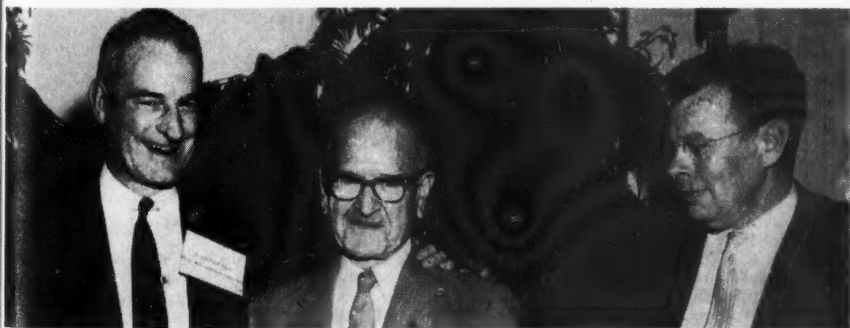
While the eight subpanels are the usual working groups of the Army Scientific Advisory Panel in

their assigned areas, much work is accomplished outside this framework. The entire Panel conducts meetings every spring and fall, and the Executive Committee meets frequently. At the same time, *ad hoc* groups are organized for special tasks. All members are kept informed through a quarterly News Letter, while individual members maintain a continuing exchange of information among themselves and with their military consultants and staff assistants. Any single member can be a one-man task force.

Army Problems Considered

THEME of the two meetings each year is always closely related to current Army trends. An illuminating example is the April 1959 meeting at Asbury Park, New Jersey, when the theme was "Army Research and Development for Limited War." Panel members heard briefings on Soviet activities in many fields; the Army's technical intelligence problem; recent developments in physical and mental incapacitating agents; satellite and space activities; progress and problems in Army communications; and

Pictured at annual spring meeting of Army Scientific Advisory Panel is Richard S. Morse, now Director of Army Research and Development, who succeeded Dr. William H. Martin, center. At right is Dr. James W. McRae, now chairman of ASAP.



Waging the Wizard War

meteorology, upper air, semi-conductor and device research. Panel members also usually tour one or more Army facilities during each meeting.

At the close of each meeting, the Panel submits to the Army a number of important recommendations concerning scientific areas of endeavor in which advances in the state of the art justify changes in emphasis on research and development activities.

For the 1959 fall meeting scheduled 4-6 October at Fort Monroe,

Virginia, Panel members will see at first hand the Army combat developments program and recent field test results. The Annual Spring Meeting in April 1960 at Dugway Proving Ground, Utah, will give Panel members the opportunity to observe actual testing of latest chemical warfare agents and to view the biological warfare test area and facilities.

WHILE ASAP recommendations are concerned with such aspects of the Wizard War as atomic

THE ARMY SCIENTIFIC ADVISORY PANEL

Chairman: Dr. James W. McRae, Vice Pres., Amer. Tel. & Tel.
Vice Chairman: Dr. Clifford C. Furnas, Chancellor, Univ. of Buffalo

FIREPOWER SUBPANEL

Maj. Gen. K. D. Nichols, USA-Ret., Consulting Engineer, Washington, D. C. (Chairman)
Dr. Charles C. Lauritsen, Prof. of Physics, Calif. Inst. of Tech. (Vice Chairman)
Dr. Alvin C. Graves, Director, Test Div., Los Alamos Scientific Lab.
Dr. Edward C. Stevenson, Prof. of Physics, Univ. of Virginia
Dr. John R. Dunning, Dean, Sch. of Engr., Columbia Univ.
Dr. William C. Tinus, Vice Pres., Bell Tel. Lab., Inc.
Dr. John S. Foster, Jr., Assoc. Dir., Univ. of Calif. Radiation Lab.

AIR MOBILITY SUBPANEL

Mr. Eugene L. Vidal, Avon, Connecticut, (Chairman)
Mr. Willis M. Hawkins, Asst. Gen. Mgr., Wpn. Syst., Missile Syst. Div., Lockheed Aircraft Corp. (Vice Chairman)
Dr. C. S. Draper, Head, Dept. of Aero. Engr., Mass. Inst. of Tech.
Morrough P. O'Brien, Dean, College of Engr., Univ. of California
Mr. Michael E. Gluhareff, Engr. Mgr., Sikorsky Aircraft
Mr. Charles H. Zimmerman, NASA, Langley Aero. Lab.
Dr. A. A. Nikolsky, John C. Green Foundation, Princeton Univ.

GROUND MOBILITY SUBPANEL

Mr. Richard C. Kerr, Consulting Engr., New York, New York, (Chairman)
Dr. Ralph E. Fadum, Head, Dept. of Civil Engr., No. Carolina State Coll., (Vice Chairman)
Dr. Lester M. Goldsmith, Consulting Engineer, Phila., Pa.
Mr. K. T. Keller, Ret'd Chmn. of Board, Chrysler Corp.
Mr. C. G. A. Rosen, Consulting Engineer, Woodside, Calif.
Maj. Gen. L. J. Sverdrup, USA-Ret., Pres., Sverdrup & Parcel, Inc.

MANAGEMENT OF R&D SUBPANEL

Dr. Daniel E. Noble, Exec. Vice Pres., Motorola, Inc., (Chairman)
Dr. Frank C. McGrew, Dir., R&D Div., Polychemicals Dept., E. I. duPont deNemours & Co. (Vice Chairman)
Dr. Hendrik W. Bode, Vice Pres., Bell Tel. Labs., Inc.
Dr. C. O. Strother, Vice Pres., Union Carbide Nuclear Co.

firepower, ballistic missiles, talking satellites, they also are intensely concerned with the less dramatic but highly practical items of direct and personal concern to the fighting man — improved protective clothing, simplified engines, the special requirements of the soldier in combat under any environmental condition.

Far from being ivory tower dreamers, the ASAP scientists are hard-headed realists. They deal with top secret matters and with unclassified matters; they focus not

only on the fighting man's weapons and equipment, but on the man himself, his comfort and well-being.

So, whether it may be a matter of providing the combat soldier with good boots, protective clothing and a tasty hot meal in the field or a flying platform, ballistic missile or an atomic weapon, the Army Scientific Advisory Panel with its 60 "Wizards" brings brains that money can't buy to bear on any Army problem. As a result, the Army and the taxpayer benefit.

Dr. Frederick L. Hovde, Pres., Purdue Univ.
Dr. John E. Vance, Prof. of Chem., New York Univ.
Dr. Ernst Weber, Pres., Polytechnic Inst. of Brooklyn

HUMAN FACTORS SUBPANEL

Dr. William A. Hunt, Prof. of Psychology, Northwestern Univ., (Chairman)
Dr. Harry F. Harlow, Prof. of Psychology, Univ. of Wisconsin, (Vice Chairman)
Dr. Roger W. Russell, Exec. Secy., Am. Psychological Assoc.
Dr. S. Rains Wallace, Jr., Dir. of Research, Life Ins. Agency Management Assoc.
Dr. Leonard Carmichael, Secy., Smithsonian Institution
Dr. Ernest J. McCormick, Prof. of Psychology, Purdue Univ.

CBR SUBPANEL

Dr. Charles E. Waring, Head, Dept. of Chem., Univ. of Conn., (Chairman)
Dr. Walter J. Nungester, Dept. of Bacteriology, Univ. of Mich. Med. Sch., (Vice Chairman)
Dr. Robert T. Haslam, Dir., W. R. Grace & Co.
Dean W. Albert Noyes, Jr., Prof. of Chem., Univ. of Rochester
Dr. Ira L. Baldwin, Spec. Asst. to Pres., Univ. of Wisconsin
Dr. Stanhope Bayne-Jones, Brig. Gen., USA-Ret., Spec. Asst., Dir. Health, Education & Welfare
Dr. W. George Parks, Head, Dept. of Chem., Univ. of Rhode Island

ENVIRONMENTAL RESEARCH SUBPANEL

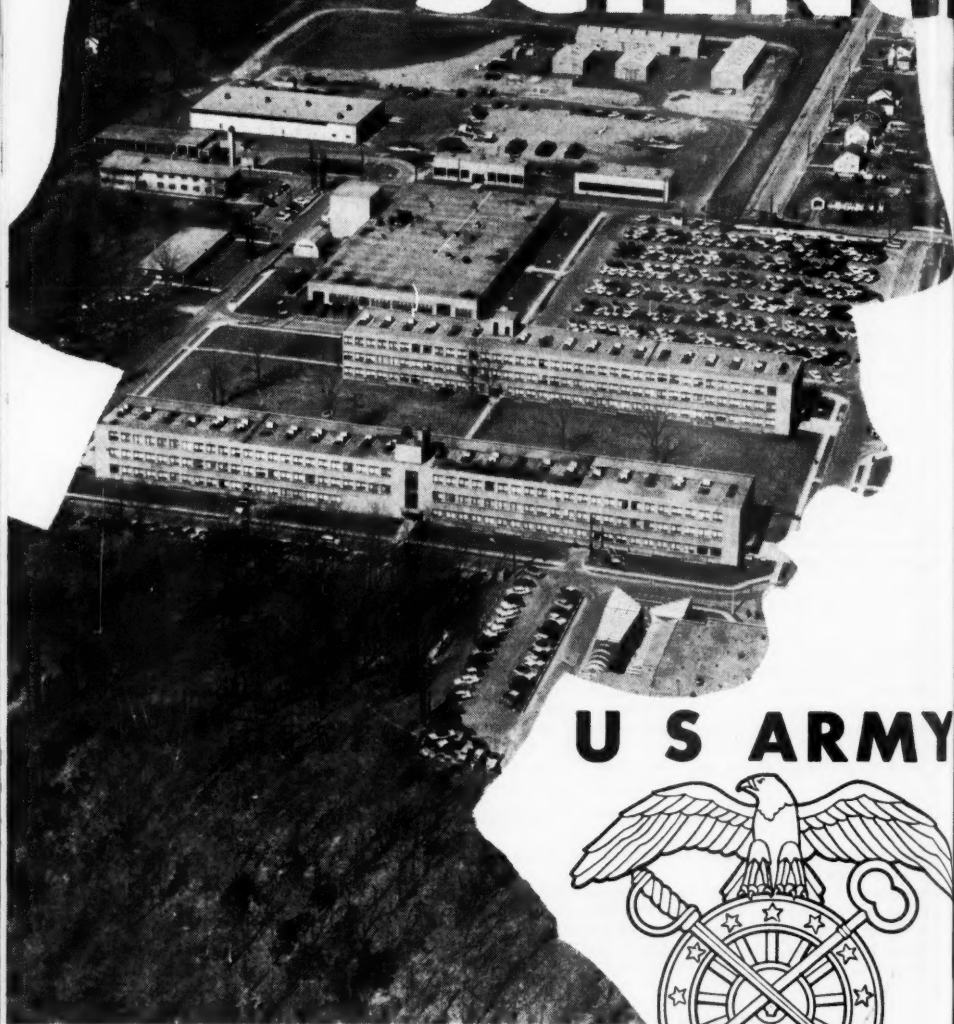
Dr. Lester E. Klimm, Prof. of Geography, Wharton Sch. of Finance & Commerce, Univ. of Pa., (Chairman)
Dr. Harwood S. Belding, Prof. of Environmental Physiology, Univ. of Pitts., (Vice Chairman)
Dr. Colin M. MacLeod, Hospital of the Univ. of Pa.
Dr. William Van Royen, Head, Dept. of Geography, Univ. of Maryland
Dr. John H. Talbott, Prof. of Medicine, Buffalo General Hospital
Dr. Frederick R. Wulsin, Prof. Emeritus, Tufts Univ.

COMMUNICATIONS AND ELECTRONICS SUBPANEL

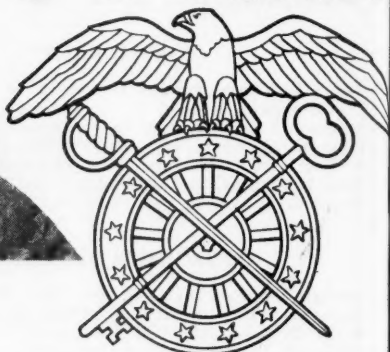
Dr. Andrew Longacre, Dir., Def. Syst. Labs., Syracuse Univ., Research Corp., (Chairman)
Dr. Donald G. Fink, Dir. Research, Philco Corp., (Vice Chairman)
Dr. W. R. G. Baker, Vice Pres. for Research, Syracuse Univ. Research Corp.
Dr. William L. Everitt, Dean of Engr., Univ. of Ill.
Dr. Joseph M. Pettit, Dean, Sch. of Engr., Stanford Univ.
Dr. William Shockley, Dir., Shockley Transistor Corp.
Dr. Ralph Bown, Ret'd Dir. and Pres. of Research, Bell Tel. Labs., Inc.
Dr. Jerome B. Wiesner, Dir., Research Electronics Lab., Mass. Inst. of Tech.

At Quartermaster Research
Ideas Become Items as

SCIENCES



U S ARMY



Q M C

Engineering Command,

SERVES THE SOLDIER

Major General Charles G. Calloway

QUARTERMASTER support for the Pentomic Army begins at the Quartermaster Research and Engineering Command.

From its headquarters in Natick, Massachusetts, the Command directs and guides the effort of 1500 scientists, technicians, and support personnel who apply their knowledge and skills to the development of new and improved food, clothing, and equipment for Army combat and service forces.

The Command includes—

- Quartermaster R&E Center Laboratories, located with Command headquarters at the U. S. Army Quartermaster Research and Engineering Center in Natick;

- Quartermaster R&E Field Evaluation Agency, which carries out field testing of items from headquarters at Fort Lee, Virginia;

- Quartermaster Food and Container Institute for the Armed Forces, in Chicago; and

- Quartermaster Radiation

Planning Agency, in Washington, D. C., which is concerned with the planning, construction and operation of the U. S. Army Ionizing Radiation Center.

Quartermaster research and engineering is a world-wide operation. Observers from the Command are on duty in every part of the world where United States troops are stationed, sending back reports on the effectiveness of Quartermaster items. The Field Evaluation Agency carries out tests in Yuma, Arizona, in the Canal Zone, at Fort Churchill, Canada, and many other places where severe climatic conditions are encountered.

Scientists from the Command participated in Operation Deep Freeze at the South Pole, checking on the performance of Quartermaster-developed clothing and rations. Plans are underway to participate in the Department of the Army Polar Research Development Program in Greenland.

The Command works closely with

Science Serves the Soldier

the British and Canadian armies in the Tripartite Standardization Program, designed to provide supplies and equipment which can be used interchangeably by American, British, and Canadian troops. Scientific information in unclassified areas is exchanged with scientists and research institutions throughout the Free World.

THE mobility and dispersion which are basic to the Pentomic concept provide the guidelines for Quartermaster research and engineering efforts. To speed supply operations to fast-moving forces, to support widely dispersed groups cut off from normal supply lines, and to protect men and supplies from the battlefield hazards of conventional or unconventional weapons—these are the problems which are being solved by the Research and Engineering Command.

Combat clothing for the Pentomic soldier is being developed under a new concept—the all-purpose integrated uniform, suitable for a wide variety of climatic conditions, and incorporating a degree of protection against many battlefield hazards.

Experiments are being made on a combined hot and cold weather uniform in which the hot weather

uniform serves as the basic suit for cold weather wear. Standard items can be added to the basic uniform as climatic conditions require.

Items required for battlefield protection, such as body armor, will be compatible with the integrated uniform, and it is foreseen that protective characteristics can be built into many combat clothing items, thus eliminating the need for added garments.

DEVELOPMENT of special protective clothing such as the missile fuel handler's suit and protective clothing for firefighters is a responsibility of the Command.

The fuel handler's suit provides full protection, under all anticipated conditions, for crews handling highly toxic liquid fuels for guided missiles. The firefighter's suit, made of aluminized kraft paper, has performed extremely well in tests carried out in conjunction with the U. S. Forestry Service.

The Command is studying a new type of footwear construction which may reduce the cost of a pair of combat boots considerably and eliminate much of the need for repairing boots in the field. This is the direct molded sole process, which vulcanizes the entire outsole and heel directly to the upper.



MAJOR GENERAL CHARLES G. CALLOWAY

Commanding General

Quartermaster Research & Engineering Command

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entisted scientific and professional personnel work closely with civilian scientists in performing highly technical research projects.



SUPPLIES serve their purpose only when they are in the hands of the troops who need them. Accordingly, Quartermaster research and engineering devotes much time and effort to the development of equipment to handle and deliver the food, clothing, POL, and other items for which the Quartermaster Corps is responsible.

Aerial delivery is now a supplementary means of supply and re-supply for front-line troops. A major objective of the Command is to make aerial delivery operations more efficient and more economical. This is being achieved through development of improved cushioning materials.

Using paper honeycomb, Quartermaster technologists have developed a combat-expendable aerial delivery platform which can be assembled for one-seventh the cost of a standard platform. The plastic cushioning materials can be shipped in their unexpanded state, and expanded or "foamed" in the field just prior to use, thus saving considerable storage and shipping space. Similarly, paper honeycomb can be shipped in its compact form

and expanded by a Quartermaster-developed machine which is now undergoing engineering test.

A new Quartermaster Rough Terrain Forklift Truck, recently standardized, can move its full rated load of 6,000 pounds through water five feet deep and up grades of 45 percent. It is well suited to the movement of supplies over beach areas or other unprepared surfaces, and for loading and unloading landing craft. A 10,000-pound capacity model also has been developed.

The Quartermaster Corps Bulk Fuel Concept—the movement of bulk POL as far forward as possible, with delivery direct from bulk fuel carriers to using vehicles—has been greatly advanced by development of a Portable Class III Supply Point. With a normal capacity of 60,000 gallons, the Supply Point can load six 1200-gallon bulk fuel carriers while three 5,000-gallon tankers are off-loading into the system. The Supply Point reduces the turn-around time of bulk fuel carriers, and thus promotes greater operational ranges for armor and other combat vehicles.



Arctic Test Chamber where temperature heat, and the Center produces both, as in the Arctic Test Chamber where temperature ranges down to -70° F, while . . .



. . . in contrast, expendable firefighter suits go through fiery tests and footwear is tested in blistering desert sands, below.



IN THE development of new and improved Quartermaster items, the Command has at its disposal some of the finest scientific equipment ever constructed for military research.

The Quartermaster Solar Furnace, largest in the United States, is used in the search for materials to protect the soldier against the thermal radiation of nuclear and atomic weapons. It is capable of intensifying ordinary sunshine into temperatures approaching those generated by nuclear blast. This is done by concentrating radiation from the sun into a focus image about four inches in diameter.

Materials under development are placed at this focus to determine their behavior under high thermal flux. Thus, Quartermaster researchers are not completely dependent upon results obtained in atomic field trials, which are comparatively rare and which involve considerable expense in moving scientists and equipment to the test site.

The Climatic Chambers at the Natick Center can reproduce practically any climate in the world. They are an outstanding laboratory facility for testing clothing, rations, and equipment. Electronic devices attached to volunteer test subjects transmit and record pulse, body temperature, respiration, and other physiological data which occur during simulated military situations. Using these chambers, Quartermaster scientists can make many improvements in new items before they are subjected to actual field tests. In this way much time and money is saved.

IN the past, the Quartermaster Corps has placed great emphasis on

Recently standardized Rough Terrain Forklift Truck can move 6,000 pound load through five feet of water and up a 45 percent grade.



the efficient feeding of large bodies of troops. In the Pentomic Army, however, there is a requirement for rations for much smaller tactical forces, deployed over hundreds of square miles, operating independently to a degree little known since frontier times.

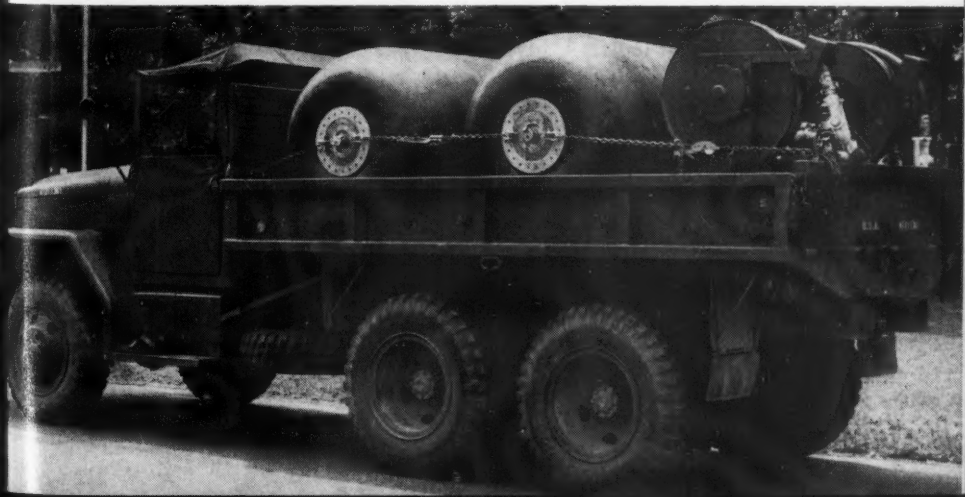
To meet this need, the Quartermaster Corps has created the concept of Simplified Food Logistics. This is a precooked, dehydrated meal, packaged in containers which can be used for rehydration, and then as a serving vessel for the meal

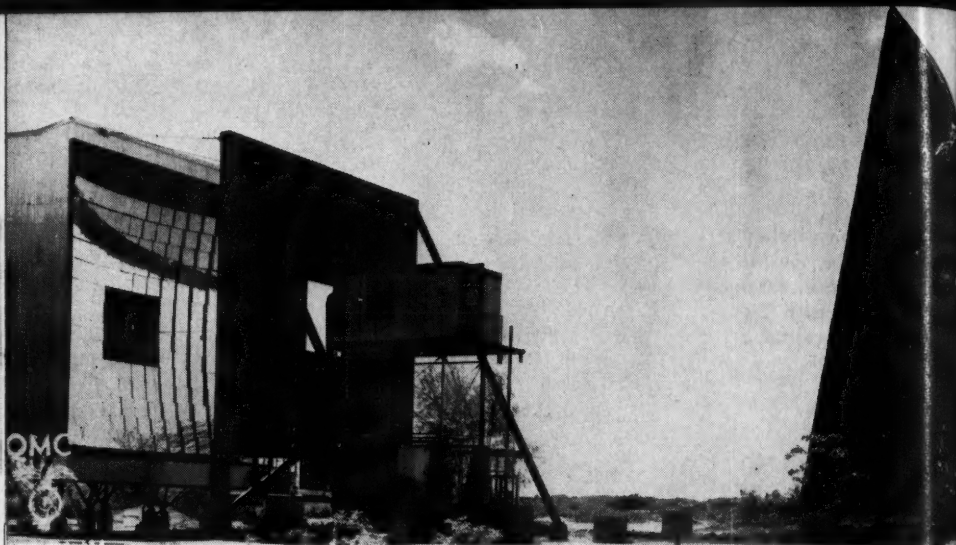
itself. Under this concept, troops will have adequate, nourishing meals which can be easily and quickly prepared without trained mess personnel and with a minimum of equipment. Only water and heat will be required.

Two new Quartermaster items supporting this concept are the individual stove and the cold-weather canteen, both now being field tested.

The individual stove weighs only one pound, and burns leaded gasoline, the fuel most readily available

Collapsible tanks and rear mounted dispenser are designed to provide additional bulk fuel carriers to speed POL delivery without addition of special vehicles.





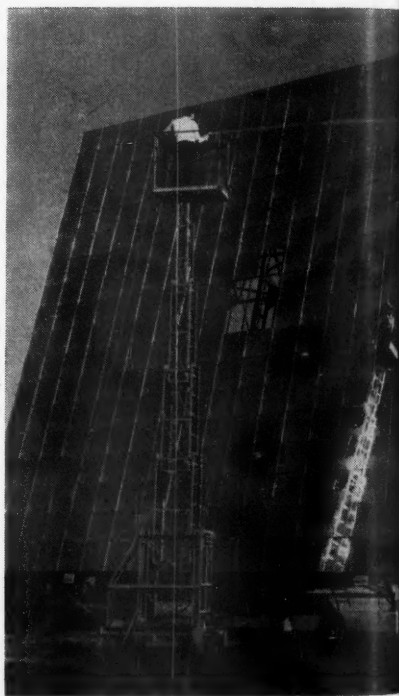
Solar furnace, above, produces temperatures approaching those of a nuclear blast through use of some 1,400 square feet of mirrors, right.

in the field. Its carrying case can be used to heat one and one-half pints of liquid, or to warm canned rations.

The cold-weather canteen has an inner and outer shell of stainless steel, and can keep coffee, tea, or soup hot for six hours at 40° below zero. Its capability to keep the soldier's drinking water from freezing at extremely low temperatures fills a long-felt need.

To meet the needs of the Pentomic Army, the Quartermaster Corps is pioneering the preservation of food and other Army material by ionizing radiation. The U. S. Army Ionizing Radiation Center, now being planned by the Quartermaster Research and Engineering Command, will explore the commercial and economic feasibility of this method of preservation.

EVERY new and improved item of Quartermaster supply draws on



the basic research program of the Command. This basic research, concerned with the discovery of new principles and theories, and the generation of original ideas, plays a major role in all Quarter-

master applied developments.

Basic research on solid state physics leads the way toward improved body armor and better combat headgear. Study of the biological and biochemical reactions of microorganisms is concerned with finding ways to prevent tremendous amounts of damage caused to military supplies each year.

Study of basic heat flow principles relates to improving thermal protection for the soldier. Many of the Army's needs can be best met by new materials, developed through basic research on plastic films, coated fabrics, and chemical materials.

ALSO basic to Quartermaster research are human engineering studies aimed at eliminating incompatibilities between Quartermaster-designed items and those supplied by the other Technical Services. These studies assure that the Quartermaster-equipped soldier is able to operate Signal, Ordnance, Engineer and other equipment without interference, hazard, or discomfort.

Studies on world-wide temperatures, wind speed frequencies, and other militarily significant climatic and geographic data by Quartermaster scientists provide information on the clothing, equipment, and rations suitable for operations in all areas of the world at any season of the year. To make this information readily available, a system for machine storage of data has been devised.

Since 1775 the mission of the Quartermaster Corps has been to provide the best possible food, clothing, and individual equipment to the American soldier. As the Army moves into its Pentomic Age,



Individual stove weighs one pound, uses ordinary gasoline to provide a compact, light means of providing the soldier with hot food.

the Quartermaster Research and Engineering Command must play a vital role in assuring that the Quartermaster Corps will be even more effective in the future.

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**Community relations at work
in Sixth U.S. Army**



Colonel Harold C. Lyon

ONE OF the unique features of the United Nations headquarters in New York City is the system used to translate simultaneously the remarks of a member delegate from his own language to those of all member nations. This rapid, efficient system ensures that there is no misunderstanding in meaning or intent—a factor vitally important in international relations.

In much the same manner, the Army's community relations program is designed to translate for the American public the importance of their Army—its strength, capabilities, problems, personnel and requirements, present and future.

COLONEL HAROLD C. LYON, Infantry, is Information Officer, Headquarters, Sixth U.S. Army.

The phrase "grass roots" is often heard in this connection. To tell the Army's story effectively and to earn community respect and confidence it is essential that the Army message penetrate to the last individual in the smallest village throughout the breadth of this vast region.

The Sixth U. S. Army area comprises the states of Washington, Idaho, Montana, Oregon, California, Nevada, Utah and Arizona. The terrain varies from the soaring mountains to broad deserts and in population density from sparsely settled states such as Nevada and Montana, to the largest metropolitan areas.

In many areas the Army's sole representative is a recruiter or a

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Common Ground

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Reserve or Army National Guard organization. The recruiter, the advisers on duty with Reserve and National Guard units, and the officers and men of these units are key individuals, interpreting the Army to the public and acquainting them with the Army's achievements. In many localities, they embody Army community relations.

Community relations, it may be said, consists of everything a military person says or does. There can be no doubt but what someone will be influenced or will form an impression, good or bad, as the result of any action, word, or even the appearance of a military man.

At Headquarters Sixth Army, it is generally accepted that good community relations is the mission

of all divisions: Public Information Division has its Press Branch, Radio-TV Branch, and Home Town News Branch. Troop Information Division has responsibilities for the internal information program. Community Relations Division, with its staff of one officer, one information supervisor and two information specialists, it is recognized, could not alone carry the entire load of earning community confidence.

APART from the guidance contained in appropriate Department of the Army regulations and circulars, there is no specific community relations document promulgated as such by Headquarters Sixth Army. Because of the vast area involved and the variety of conditions en-

Where Grass Roots Find Common Ground

countered, it becomes necessary to tailor the community relations program individually for each specific area.

To pursue this objective, the Community Relations Division has published a brochure for guidance of information personnel and all others concerned with the program. The brochure describes a representative community relations program as conducted in this headquarters, with guide lines adaptable to all areas.

Each local information officer is encouraged to organize his program to fit his own area and specific conditions. In addition, frequent use is made of the bi-monthly *Sixth Army Information Officers' Bulletin*, normal channels of correspondence and inspections to keep a finger on the pulse of operations.

The Program in Action

PERHAPS one of the most effective methods of reaching the average citizen is through the medium of exhibits, displays and demonstrations. Besides introducing the public to Army equipment and capabilities, it brings the local citizenry into contact with representative young men of the Army who are manning these displays and exhibits. The U. S. Army Exhibit Unit, Cameron Station, Alexandria, Virginia, is of great help in furnishing traveling exhibits including missiles, models and satellite displays.

ANOTHER excellent source of exhibit material is found in close relationship with industry, especially that segment engaged in prime defense contracts. In Sixth Army Area, Douglas, Westinghouse, Gen-

eral Electric, United States Steel, Philco, Varian Associates, and Jet Propulsion Laboratory, California Institute of Technology, to name but a few, have been of great assistance in supporting the Army display program.

Obtaining a variety of display items is only an initial step, however. Appropriate areas must be found in which to exhibit the items. Here it is important to make our abilities known, rather than waiting for a request for display material. Close liaison has been established with the public schools system, with business, professional and civic groups, and with the public relations and display managers of major stores. By making all of these agencies aware of Army abilities, and the regulations under which displays are provided, a continuing market has been found for bands, honor guards, and speakers.

JUST one example, from many hundreds, of the results in this area: In San Francisco during a nine-month period 36 displays and talks on Army missiles and space probes drew nearly 1,000 enthusiastic letters from students and teachers in city schools. One fifth-grader asked if he could sign up for the first interplanetary trip. A typical letter from a school principal stated in part, "Everyone became more aware of the important role and farsightedness of the U. S. Army. You might be interested in a statement made by a little fellow who attended the program, 'Golly! We saw a whole family of rockets!'"

IN THE area of large-scale demonstrations, only several posts in the Sixth Army Area are capable

of putting on major weapons and equipment demonstrations. Typical is the annual Division Day at Fort Lewis, Washington, featuring a review with approximately 10,000 troops and 300 pieces of equipment on parade. The history, background and mission of each major unit is described as it passes the reviewing stand.

Bleachers accommodate 10,000 spectators. Historical handouts are distributed as the spectators are seated. Military Police control traffic and buses are available to carry spectators to the firing area three miles distant. The hour-long firepower demonstration includes all division weapons, and features demonstrations of tanks and aircraft in action, equipment drops, examples of mobility. The day concludes with a simulated atomic attack on an objective.

Division Day, which is staged in addition to the normal unit open houses and public displays through the year, is so successful that a closely controlled publicity program is necessary in the Olympia-Tacoma area to insure a turnout only as large as the post can accommodate. A Committee from Washington State Chapter 1, Association of the United States Army, coordinates advertising in newspapers and with civic and professional groups.

USE of Army bands, drill teams and color guards is another effective method of representing the Army before civic groups. Widest possible use is made of the Sixth U. S. Army Band, color guards and bands from Forts Lewis, Ord, MacArthur and Camp Irwin. As prescribed in AR 360-55, no band in the Sixth U. S. Army area is

scheduled to appear at a civic function without prior clearance by professional musician groups.

To provide advance publicity, a press packet is mailed to each requesting agency of an approved event, plus a fact sheet on the band and, depending on the requirement, a television slide announcement. Also available are a 15-second and a 30-second sound-on-film reel for television spot announcements. This packet permits each sponsor to tailor publicity to local needs and conditions. The Sixth Army Color Guard routinely accompanies and marches with the band in all civic parades. Today the various Army bands in this area receive many more requests for appearances than they can fill.

Speakers Program

ALL installations rely heavily on military speakers as another effective means of placing the Army before the public. The Information Section, Headquarters Sixth Army, sends out a quarterly flyer to all business, professional and civic clubs in the San Francisco Bay area informing them of its speakers' program and inviting participation.

Information also is dispatched on available films which can be shown either alone or in conjunction with a speaker. As with bands, many more requests for films and speakers are received than can be filled. Organizations availing themselves of this speakers program include Kiwanis, Rotary, Knights of Columbus, American Legion, Veterans of Foreign Wars, Chambers of Commerce, Merchants Clubs, DAR, GAR, Sons of the American Revolution, Jewish War Veterans, and many others.



Sixth U. S. Army Band participation in parades and troop reviews effectively represents the Army before public, civic groups. Here band parades at the Presidio.

A similar program is successfully pursued at the various installations throughout the Sixth Army Area. As one example, the Information Section at Fort Ord maintains a current list of qualified speakers and circularizes business and professional organizations in its area announcing availability of Army speakers and films. The post averages six speaking engagements a month.

A continuous program of installation tours is another effective instrument. Each post manages a program in which schools, youth groups and civic organizations are given a comprehensive tour of the post, with qualified personnel describing its mission and facilities.

Schools, youth groups, civic and professional organizations receive periodic informational sheets describing the tour program. Historical points of interest on the post, Nike battery sites, lunch in a mess hall with a unit, and often a weekly retreat parade, are highlights of the tours.

At Fort Ord, each of the basic training companies holds open

house at the end of the company's fourth week of training. Each of these is attended by several hundred relatives and friends. Weapons and equipment displays, orientation by the company commander, tour of the area and lunch in the unit mess hall are highlights.

CLOSELY allied with the tour program is the support rendered by all our installations to youth groups. Typical is Yuma Test Station, a small installation about 15 miles outside Yuma, Arizona, in the sparsely settled southwestern portion of Arizona. Its ideal location on the Colorado River makes it a frequent starting or stopping point for boat trips.

Very often, groups of Boy Scouts, Explorer Scouts and other groups from as far away as Los Angeles stop at Yuma Test Station, where cafeteria, billeting, swimming pool and other facilities are available in conjunction with a tour of the post. Even though a small post and isolated, Yuma Test Station does its utmost to represent the Army at the grass roots level.

THERE are, however, many portions of the Sixth U. S. Army area where the only Army post is an Army Depot under the control of a technical service. The role of these installations and their active participation in the community relations program is of great value. For one example out of many, consider the activities at Sharpe General Depot, eight miles south of Stockton, California, where military personnel number 250 to 500 and civilian workers average 2600.

Participation by all Depot personnel in community activities is

constantly stressed by the Commanding General. Many hold positions of leadership in local veteran, social, school, church, civic, welfare, fraternal and professional organizations. The Depot even has its own American Legion post. At least twice a month, tours of Sharpe General Depot, nearby missile sites, and training centers are conducted for students, educators, business, professional and civic clubs.

Each February, fifty selected Boy Scouts are assigned key positions in the Depot, serving alongside regular personnel in such positions as Commanding General, Adjutant, Post Engineer, and the like.

Close liaison is maintained with the Chamber of Commerce, Merchants Association and all local civic officials. Names of all superior performance award recipients are forwarded to their Congressional Representative in Washington who writes each recipient a personal letter of commendation.

The liaison between the Depot and the local community is epitomized in a paragraph from a recent letter sent by the Greater Stockton Chamber of Commerce to the Secretary of the Army: "Members of the Department of the Army in the Stockton area are excellent emissaries of the Army and all it represents. We are proud of the splendid cooperation that this Chamber receives, and we pledge to you, Mr. Secretary, our continued support in all your Department's activities in this area."

SCHOOL systems throughout the area receive active support by means of films, speakers, displays, and tours. Close cooperation is extended to amateur scientific rocket-



Community relations includes such activities as Maj. Gen. Carl F. Fritzsche, Commanding General of Fort Ord, addressing elementary students on anniversary of United Nations.

eers at Yuma Test Station, Yakima Firing Center, Washington, and at Fort Ord and Camp Irwin.

Still another type of grass roots community support is rendered by Reserve units. An example here is X U. S. Army Corps (Res) in the Pacific Northwest. Two extensive projects were completed last spring by Oregon Reservists in support of the statewide Oregon Centennial. A welcoming stockade—a picturesque log replica of an early frontier post—was constructed on Siskiyou Summit south of Ashland, Oregon, by men of the 417th Engineer Brigade from Medford, Oregon. The stockade is the first wayside information booth to greet thousands of tourists entering Oregon on US 99. Other Army Reservists of the 104th Infantry Division from Portland recently devoted 2,500 man hours to construction of a 30-inch gauge railroad on the Oregon Centennial grounds in Portland.

Not all the contributions of Reserve units may be as spectacular as these; nonetheless, each project has a definite and beneficial impact on its community. During the past



Helicopter on downtown street in Takoma, Washington, helps advertise Armed Forces Day program at Fort Lewis.

winter, men of Companies I and K, 383d Infantry Division, Caldwell, Idaho, eliminated a hazard—an exposed irrigation ditch—near a local grade school. Near Monroe, Washington, a Boy Scout camp swimming beach and pier was repaired by Reservists of the 452d Engineer Battalion during a weekend drill. All such projects are carefully screened by the senior Reserve headquarters concerned and Headquarters X Corps to ensure that they do not interfere with or supplant civilian employment.

Thus, in every aspect, community relations in Sixth U. S. Army Area is a going operation, claiming the attention and abilities of all ranks and categories of active and reserve forces. Here the community and the Army are synonymous—and the closer the contact, the greater the understanding of each other's problems and missions, making the task of the soldier that much easier.

Division Day at Fort Lewis, Washington, features troop review and firepower demonstration which attracts thousands of visitors.



NEWS

of professional interest

"Silent Sentry" Improved

A transistorized version of the already small portable "Silent Sentry" radar used to detect enemy movement under any weather conditions has been developed. Switching to transistors has cut the set's power requirement in half and made possible use of a battery in place of the present gasoline generator. The new version was developed under a joint program by the Army Combat Surveillance Agency and Sperry Gyroscope Company, Great Neck, New York.

Infantry Leaders Courses

Junior officers attending Infantry officer leader courses at Fort Benning, Georgia, numbered almost 4,000 during the 1959 fiscal year. Included were graduates from 228 colleges and universities, members of all Armed Forces components and students from 10 allied countries.

Rocket and Missile Roundup

Distribution has begun by the Army of Department of Defense Fact Sheet 2-F "Guided Missiles and Rockets," which includes descriptive details on two Army rockets and fourteen missiles. These include the newest—Shillelagh, which is being developed for close-in support of troops, and Redeye, the shoulder-fired air defense guided missile designed to provide defense against low-level air attack.

West Point Curriculum

First of a series of modernizations have been put into effect in the curriculum of the United States Military Academy starting this academic year. Designed primarily to expand the basic scientific content of

the curriculum, particularly in nuclear physics and astronautics, the changes also will broaden coverage of the social sciences and humanities. Time for the added instruction has been gained by eliminating some parts of the old program and rescheduling elements of the vocational instruction in the summer training period instead of during the academic year.

High Speed Cable

A technique for helicopter use in laying a new multi-channel telephone cable at speeds up to 100 miles per hour has been developed. When the associated telephone multiplex equipment now under development is available, it will add new speed and versatility to combat forces.

The new technique employs a compact package carrying 10 miles of cable packed to prevent snagging at high pay-out speeds. The package can be hooked under a standard Army helicopter to permit spanning bodies of water or difficult terrain.

The new lightweight telephone cable can carry 96 separate two-way conversations simultaneously—eight times the present capability of military lines. The new development in combat communications was achieved jointly by the U. S. Army Signal Research and Development Laboratory and International Telephone and Telegraph Laboratories, Nutley, N. J.

Preparatory Course

The preparatory school course for the United States Air Force Academy will be conducted annually at the United States Military Academy Preparatory School, Fort Belvoir, Virginia, and at the United States Naval Preparatory School, Bainbridge, Maryland. Preparatory school va-

cancies are allocated yearly to members of the Armed Forces who meet eligibility requirements specified in Section B., AFR 53-10/AR 350-58 dated 31 March 1959.

Reactor for Medical Center

Study of effects of nuclear radiation in living organisms and treatment of patients will be performed by a 50,000-watt nuclear energy reactor to be installed at Walter Reed Army Medical Center, Washington, D. C. Largest atomic reactor available for treatment of general hospital patients in this country, the 450-ton device will produce gamma rays, neutrons and radioisotopes. Atomic International, a division of North American Aviation, Inc. Canoga Park, California, was responsible for design of the reactor.

Lightweight Container

Contributing to greater mobility, a new lightweight low-cost fiberboard container is undergoing testing by Strategic Army Corps (STRAC) units. The new containers are designed to be packed with organizational and personnel equipment of STRAC units, and kept in constant readiness for quick movement. The new container with pallet attached provides a 60 percent reduction in packing and crating materials plus savings in time and weight. Constructed of weather resistant, triple-wall corrugated fiberboard, the reusable containers can be readily transported in aircraft or slung from helicopters. For surface transport, six containers will fit into the 365-cubic foot steel CONEX container.

Distant Target Detection

Widespread strategic significance for all military services is promised from a new method of detecting large volumes of ionized gas at extremely distant ranges. Developed under the name of Project Tepee following a combination of scientific discoveries by the Office of Naval Research, the method is based on a new kind of radar—High Frequency Ionospheric Back Scatter Radar. Instead of being limited in range in the same manner as television, the new method resembles radio, using the ionosphere to reflect waves sent out by a transmitter.

When a large rocket is fired, hot gases from the exhaust are ionized and reflect

radar waves. Putting these facts together led Dr. William J. Thaler of the Office of Naval Research to conceive of the possibility of warning of a missile attack by these means. Although the method itself is complicated, equipment required is relatively simple and inexpensive. It is believed that the same basic techniques may be used to detect a nuclear explosion thousands of miles away.

Medical History Items

Individuals possessing military documents, records or articles of professional and scientific significance, including letters and photographs relating to activities of the present Medical Service Corps and any of its predecessors, are requested to allow their use in compilation of a history of the U. S. Army Medical Service Corps. An appeal for such material has gone out from the Medical Service Historical Unit, now engaged in preparing the official history. Background material concerning establishment of the former Sanitary, Medical Administrative, and Pharmacy Corps, as well as today's Medical Service Corps is needed. Those who desire to assist are invited to send material to the Director, Historical Unit, USAMEDS, Forest Glen Section, Walter Reed Army Medical Center, Washington 12, D. C. The material will be returned after duplication or, if the donor so desires, may be kept on file with the Historical Unit.

Volunteer Chemical Tests

Testing new chemical compounds to determine possible military effects is a part of the Army's volunteer program at the Army Chemical Center, where in recent months more than 400 persons have voluntarily exposed themselves to a number of new compounds without any harmful after-effects. The program is headed by Dr. Van M. Sim, chief of the Chemical Warfare Laboratories clinical research division, who subjects himself to new and untried chemical agents before testing them on other volunteers. In a recent test he sampled a synthesized version of a chemical extracted from a rare species of mushrooms used for centuries by Mexican Indians to induce hallucinations. The drug has been used recently in treatment of the mentally ill. Many new compounds

are tested in this fashion to study thoroughly their possible uses as chemical warfare agents, and to learn how to combat uses by possible enemy agents. Dr. Sim recently was the recipient of the Decoration for Exceptional Civilian Service, the Army's highest civilian award.

Anti-Missile Planning

Looking ahead for the next twenty years, a study program to identify new approaches to anti-missile defense has been established by the Advanced Research Projects Agency of the Department of Defense Known as GLIPAR—Guide Line Identification Program for Anti-Missile Research—the Program is part of Project Defender, ARPA's ballistic missile defense program.

GLIPAR is designed to encourage imaginative and bold approaches to defense against missiles without being hampered by consideration of what may today be deemed impracticable. Selected contractors will evaluate various defenses, and

those showing promise of being useful in the next two decades will be reserved for further investigation, while those theoretically impossible will be rejected. Following six months of individual study, contractors will unite in common evaluation of the various approaches, after which ARPA will determine which mechanisms may hold sufficient promise for further experimentation.

"Army Reservist"

Among military journals which welcome contributions from military writers is *Army Reservist*, official publication of the Office, Chief, Army Reserve & ROTC, Department of the Army, Washington 25, D. C. Published monthly, it has a circulation of 276,000, prefers articles up to 1,500 words, takes illustrations. It does not accept fiction. Articles are desired on Army subjects of national interest to Reservists not on active duty. (See "Free-Lancing the Military Journals," October 1959 *Digest*.)

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Veterans Day—11 November

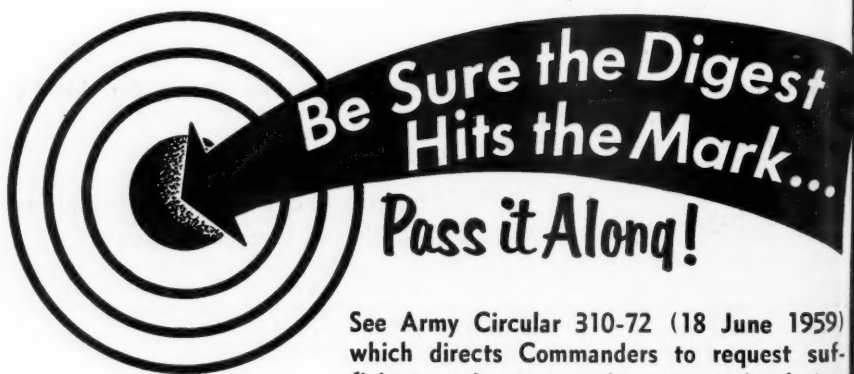
WHEN at 1100 hours on 11 November 1918 the big guns ceased their rumble and quiet settled over the battlefields of World War I, a spontaneous celebration swept the United States. In small towns and large cities, Americans staged impromptu parades cheered themselves hoarse, rang bells, tooted fire whistles, in a prolonged outburst marking their joy and thankfulness. The following year Armistice Day was proclaimed a national holiday "with solemn pride in the heroism of those who died in the country's service and with gratitude for the victory."

With the passing of years and the advent of World War II and the Korean War, Americans came to realize that the concept of military service in the Nation's defense was not limited to any one era of history. In 1954 President Eisenhower broadened the concept of the holiday, proclaiming it Veterans' Day—a solemn occasion set aside to honor *all* servicemen, living as well as dead, and the victories they have won in all our wars.

This year once more the Nation will observe two minutes of silence at 1100 hours—the time that the guns fell silent on the Western Front—as a mark of respect and gratitude to the patriotism of veterans of all our Nation's wars.

See back cover.

Request Sufficient Copies



See Army Circular 310-72 (18 June 1959) which directs Commanders to request sufficient copies to permit prompt circulation, using DA Form 12-4 (1 April 59), (Requisition for Initial Distribution of Publications and Blank Forms).

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VETERANS' DAY 1959

